ELECTROCARDIOGRAM

By

SIGLER

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Preface to the Second Edition

THIS EDITION was prepared in response to many requests from readers of the first edition and from students taking the author's course to bring the subject matter up to date. Helped greatly by the valuable constructive criticism of the reviewers of the first edition whose complimentary remarks also served as further encouragement, the author has made many important changes. The text material has been greatly shortened by eliminating nonessentials. Many electrocardiograms have been replaced and some new illustrations have been added for greater clarity. Unipolar extremity and chest leads have been fully described as to mechanism and appropriate electrocardiograms illustrating the normal and abnormal features have been included.

The triaxial reference system in determining the electrical axis and a short chapter on the ventricular gradient have been added. The subjects of cardiac hypertrophy and strain, myocardial infarction, myocardial ischemia and ischemic necrosis have been fully covered in appropriate chapters, well illustrated diagrammatically and by numerous electrocardiograms including the conventional and all unipolar extremity and chest leads. Short chapters on acute cor pulmonale and on congenital heart disease have been added. The chapter on "The Coronary Circulation and Its Abnormalities" appearing in the first edition has been eliminated as it rightly belongs to a text on clinical cardiology and has been more fully covered in the author's text "Cardiovascular Disease: Fundamentals, Differential Diagnosis, Prognosis and Treatment," published by Grune & Stratton.

The author is indebted to his son, Stephen Jay, for the valuable additions he has made in the section on electrophysics and at whose suggestion as an inquiring student many statements have been simplified. His secretary technician, Miss Ruth Carlin, is to be complimented on her good work in preparing the electrocardiograms and typing the manuscript. He wishes to thank also Mr. Henry M. Stratton, his publisher, at whose insistence this work was undertaken.

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Preface to the First Edition

ALTHOUGH it has been known for nearly a century that the contraction of heart muscle is associated with electrical activity, and such activity in the human heart was recorded by Waller as long ago as 1889 by means of Lippmann's capillary electrometer, it was not until 1901 that electrocardiography began to make rapid strides in experimental and clinical medicine. In that year Einthoven introduced the string galvanometer, which eliminated the inertia common in the old capillary electrometer. By means of this new apparatus he was able to record the rapid changes in electrical potential characteristic of the cardiac action current.

In the early phases of the development of this important diagnostic device, it was utilized mainly in the elucidation of the various cardiac arrhythmias. Within the past decade, however, it has come to be recognized also as one of the most important means of diagnosis of the various diseased states of the heart muscle, particularly in myocardial infarction.

In our enthusiasm we soon began to overlook the fact that the electrocardiogram is merely a picture of the electrical potential of the heart and that abnormalities in the electrocardiogram are not always synonymous with structural disease of the organ. Furthermore, in those cases in which structural disease is responsible for electrocardiographic abnormalities the disease need not be of a specific type. Thus abnormalities in the electrocardiogram due to degenerative changes of the heart muscle caused by coronary disease may not be any different from those caused by inflammatory changes, by trauma or by other causes, provided the extent and the location of the myocardial involvement are the same. With the exception perhaps of some cases of myocardial infarction due to coronary occlusion and a few other conditions described in this text, the electrocardiogram does not depict any lesions in the heart muscle characteristic of any specific etiology or pathology.

We are also beginning to be cognizant of the fact that marked abnormalities in the electrocardiogram may occur in the absence of myocardial disease in such conditions as cardiac hypertrophy, certain postural states, under the effect of drugs, in certain constitutional states, and in some cases without any definitely known cause.

This volume is an attempt to put the electrocardiogram in its proper

perspective It is the outgrowth of years of teaching of graduate students and interns Effort is centered on presenting the subject of electrocardiography in a practical and concise manner In order to do this only those simple points of theory have been included that will help in the understanding of the various electrocardiographic phenomena in health and disease

For the sake of simplicity and clarity the subject matter has been divided into twenty five chapters each dealing with a more or less distinct phase The historical background in the development of our knowledge of each phase is given whenever it is of sufficient interest and where it may give a better understanding of the subject The incidence etiology pathology and pathogenesis of the various arrhythmias as well as of myocardial disease due to coronary insufficiency infectious states trauma intoxications etc have been covered as fully as could be done in a treatise of this size The physiologic mechanism underlying the electrocardiographic manifestations is given whenever possible Some of the unsolved phases that are in controversy are included in the discussion and for this reason as well as for the purpose of covering the subject matter in a more comprehensive manner frequent references are made to an extensive literature The references of course do not cover all available literature Only those have been selected that serve the most useful purpose and that are not outdated

The subject of electrical axis deviation of the QRS complex and that of ventricular preponderance are treated in two separate chapters This is done in order to remove the usual misconception that the two are synonymous That the preponderance of one or the other of the ventricles usually produces a corresponding axis deviation is true It is also true however that abnormal axis deviation frequently exists in cases that show no ventricular preponderance and occasionally ventricular preponderance may occur without abnormal axis deviation

One chapter is devoted to the anatomy physiology and pathology of the coronary system This is done in order to refresh the student s mind and prepare him for a better understanding of the electrocardiographic manifestations in myocardial changes due to coronary insufficiency

One chapter is devoted to trauma of the heart to acquaint the student with whatever knowledge we possess on the subject The author believes that this chapter will stimulate further investigation in this neglected field

Chapter XXV covers a discussion of the six precordial leads The findings are based on personal observations of the author Inasmuch as very little on this subject is found in the literature some of the conclusions drawn may require revision in the future after further investigation

The various electrocardiographic abnormalities are fully illustrated by material selected from many thousands of electrocardiograms studied by the author in an extensive cardiologic consultation practice extending over twenty years and from records of the Coney Island Hospital, as well as by some records from cases in other hospitals that the author had opportunity to observe. Most of the statistical material presented here comprises cases seen at the Coney Island Hospital.

The author tenders his appreciation to Hon. Edward M. Bernecker, commissioner of the Department of Hospitals of the City of New York, for according him permission to use the material of the Coney Island Hospital. He also wishes to express his thanks to his old time friend Dr. Randolph A. Wyman, who while superintendent of the Coney Island Hospital did a great deal to improve the facilities of our Cardiology Department. Dr. Saul M. Penner, the present superintendent of the hospital, has been very cooperative in the author's undertaking, which is greatly appreciated. Thanks are also extended to Drs. Thomas J. Longo, Daniel A. McAteer, Arthur C. Graves, John C. Hamilton and Abraham D. Segal, chiefs of the departments of Medicine, Surgery, Obstetrics, Pediatrics and Urology, respectively, of the Coney Island Hospital, on whose services the author had the opportunity to observe much of the material used in this text.

Miss Jeannette Pignelli and Miss Ruth Youdelman, secretary technicians in the Cardiology Department of the Coney Island Hospital, did much in keeping careful statistical records and in preparing many of the electrocardiograms used in this text. Mrs. Rosalie J. Leslie, social service worker in the department, is to be commended for her faithful follow up of cases. Mrs. Alice Lerner Eisenberg, the author's office secretary technician, did splendid work in mounting the electrocardiograms used as illustrations and in typing the manuscript. Thanks are due also to Mr. L. V. Bergman for his work in perfecting some of the original drawings.

L. H. SIGLER

Brooklyn, N. Y., April, 1944

To My Wife, Daughter and Son

CHAPTER 1

The Foundations of the Electrocardiogram

THE ELECTROCARDIOGRAM is a picture that expresses certain electrophysiologic phenomena manifested by the heart during the process of contraction as recorded by the electrocardiographic apparatus

An attempt will be made in this chapter to present a few of the elementary electrophysical electrophysiologic and anatomic factors necessary for the understanding of the electrocardiogram

ELECTROPHYSICAL BASIS

It is beyond the scope of this text to go into the physics and mathematics of electricity Only a few very elemental points will be mentioned in order to have some understanding of the subject of electrocardiography

The *production* of an electrical current is accomplished in general use by a *current generator* that may be either thermic chemical or mechanical The *current* so generated consists of innumerable infinitesimal units of negative charges called *electrons* In the chemical generator the *electrons transferred in the* reaction between ions of different electric potential (or electron holding strength) in solution constitute the current The difference in potential between the reacting ions is called the electromotive force which is maintained between two terminals or poles partially immersed in the solution

When these poles are connected by an outside conducting medium such as copper wire the electrical current will move in a continuous flow from the pole of high potential (+) to that of low potential (−) and in the opposite direction within the generator where current consists of the movement of the negative ions or anions and the positive ions or cations of the solution This current flow will continue as long as chemical conditions of the generator maintain a difference in electrical potential between the two poles of the cell

The flow of current is thus dependent upon the difference in potential between the two poles This difference may be measured in any segment of the circuit

There are three effects produced by an electrical current so flowing each of which may be used in detecting the presence and the intensity of the current These are (1) chemical changes that the current may produce in certain media through which it is made to pass (2) heat

generated when a certain resistance is put in its way, and (3) magnetic lines of force produced around a conductor by the passage of the current through it

The last named effect is the one usually employed in measurement It is based upon the fact that when a current passes through a wire it sets up lines of force that surround the wire in concentric circles, with the wire as the center, as shown in figure 1 The direction of the lines of force depends upon the direction in which the current is traveling through the wire The extent of the lines of force at any moment depends upon the intensity of the current passing through at that moment

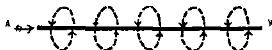


FIG 1 DIAGRAMMATIC ILLUSTRATION OF MAGNETIC LINES OF FORCE CREATED BY PASSAGE OF ELECTRICAL CURRENT THROUGH WIRE

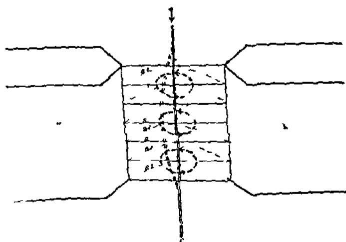
The arrow (A) indicates the direction of the current passing through the wire (W) The circles surrounding the wire represent the magnetic lines of force created by the current The direction of these lines of force is indicated by the arrows that make up the circles When the current in the wire flows in the opposite direction, the concentric lines of force surrounding the wire also change their course to opposite direction

When the conductor carrying the current to be measured is placed in a magnetic field induced by close approach of the north and south poles of a magnet the lines of force of the conductor bend those of the magnetic field and result in movement of the conductor as shown in figure 2 The direction in which this bending occurs and therefore the direction of movement of the conductor depends upon the direction of the current that passes through the conductor at any moment The magnitude of movement will depend upon the intensity of the current The apparatus that utilizes this principle of measurement is known as the galvanometer

Application to Electrocardiography

In electrocardiography the electrical current generated and propagated in the heart to be described later is conducted from the heart to the surface of the body by the various tissues From the surface it is carried off by cables which make a circuit with a conductor of very small dimensions situated between the two electromagnets of the galvanometer The electric current from the heart thus passes through the conductor alternately from above downwards and from below upwards depending upon its direction from moment to moment This alternate upward and

downward flow of the current through the conductor creates a variable magnetic field of force around the conductor in an alternating clockwise and counterclockwise direction from moment to moment This variable alternating force bends the magnetic lines of force created by the two electromagnets of the galvanometer causing rapid movements of the conductor from side to side which are photographed by a special camera connected with the electrocardiograph The finished product is the electrocardiogram



Fi DIAGRAM SHOWING HOW LINES OF FORCE IN MAGNETIC FIELD ARE BENT WHEN ELECTRICAL CURRENT PASSES THROUGH CONDUCTOR PLACED IN FIELD

Th di tion in which the l nes of force bend depends upon the direction of flow f th electrical current in the conductor The b nding of these l nes of force causes the r v n nt f th c nduc tor

M M = plus nd minus p les of magn t

C = ndu tor car ying current to be measured

C = t g lt l n s of f r e in ma n tic field created by magnet

= l ling l l n s of f r c on pa sage of current throu gh C

d c ti n of curr nt in conductor and dir ection of lines of force c nductc Mo m nt of conductor i indi ated by urved doubl

generated in the heart is infinitesimal in force and the ets up are therefore very minute In order to record these e electrocardiograph is equipped with special devices for em These depend upon the type of machine used

aree types of electrocardiographic apparatus on the market he string galvanometer is the essential part Another type amplifying the motion of a beam of light reflected from

a mirror suspended on the conductor in the galvanometer In the third type the electrical impulses from the heart are magnified in a sufficient degree to move a stylet and are thus recorded directly on paper The last is known as the direct writing machine

In the string machines, the essential elements of which are shown diagrammatically in figure 3, the conductor or string (A), which is micro

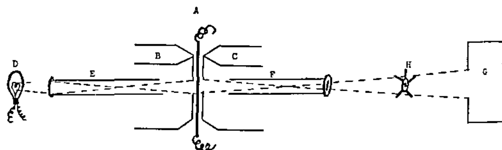


FIG 3 DIAGRAMMATIC REPRESENTATION OF ESSENTIAL PARTS OF STRING ELECTROCARDIOGRAPH

A = string with its connectors to electrical wires ultimately leading to patient *B C* = poles of magnet creating magnetic field *D* = source of light *E F* = microscopic condensing and projecting lenses respectively *G* = camera *H* = time marker

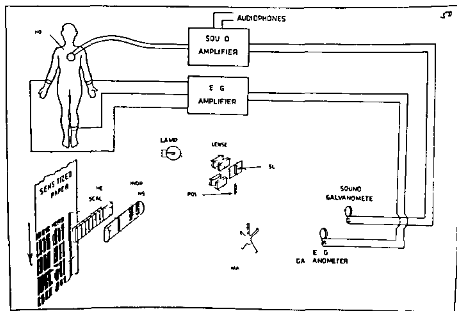


FIG 4 DIAGRAMMATIC REPRESENTATION OF ESSENTIAL PARTS OF AMPLIFYING TUBE MACHINE

The parts used for simultaneous recording of heart sound [illegible]

scope in thickness is encased between two powerful magnets (B and C). A source of light (D) is focused on it by strong condensing (E) and projecting lenses (F) that magnify the shadow and movements of the string to about one thousand times their natural size. These are recorded by a photographic camera (G). Between the projector and camera is a time marker (H) that interrupts the beam of light at intervals of 0.04 second forming vertical lines on the film for time measuring. An etched scale forms horizontal lines for measuring the heights of deflection to be described later.

In the amplifying tube machines the essentials of which are shown diagrammatically in figure 4 the current generated in the heart is first passed through an amplifier that magnifies it immensely. It is then

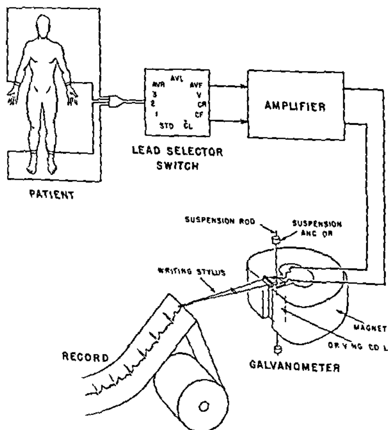


FIG. DIAGRAMMATIC REPRESENTATION OF ESSENTIAL PARTS OF THE DIRECT WRITING MACHINE

(Courtesy ... Co.)

passed through a galvanometer in which a minute rotating mirror is lodged A beam of light from a stationary lamp reaches the mirror and is deflected through lenses onto the bromide paper in a camera A fixed wire interposed in the beam of light throws a shadow on the bromide paper Movements of the mirror caused by the greatly magnified heart current, deflect the beam of light, this results in movement of the shadow of the wire, which forms the tracing Between the camera and the galvanometer are a time marker and an etched scale that forms square millimeters for the measurement of time and heights of deflections as in the string machine

In the direct writing machine, the essentials of which are shown diagrammatically in figure 5, the current from the heart is magnified by an amplifier in a sufficient degree to mobilize a driving coil situated between the poles of the galvanometer magnet A writing stylus which is attached to the coil is thus moved from side to side by the passage of the current and inscribes its movement on a special paper The magnitude and direction of such movement depend upon the magnitude and direction of the current coming from the heart at that moment

A complete description of any given electrocardiograph may be obtained from its manufacturer

The force of the current produced in the heart is measured in millivoltage This does not indicate the rate or intensity of current flow which should be expressed in milliamperage For the purpose of electrocardiographic study the millivolt unit is sufficient

Anatomic Basis

Before discussing the electrical manifestations of the heart that the electrocardiograph records we must elucidate a few facts about the anatomic structure of the heart

The heart is supplied with specialized tissues for the creation and the propagation of elecrical impulses These are the sino auricular node the auriculoventricular node the auriculoventricular bundle the bundle branches and the ramifications of the latter into the arborization of the Purkinje system of fibers as illustrated diagrammatically in figure 6

The *sino auricular node* first described in 1907 by Keith and Flack [1] is located at the junction of the superior vena cava and the right auricle It is about 2 cm long and 2 mm deep and consists of peculiar neuromuscular structure It is in contact with the vagal and sympathetic nerve fibers and is supplied by a branch of the right circumflex and occasionally also by the left circumflex artery

According to Keith and Flack some sinus remnants are also found in the auricular septum and in other areas These may play a part in the

pathogenesis of auricular premature contractions as discussed in chapter VII

The *auriculoventricular node* the *bundle branches* and the *arborization of the Purkinje system of fibers*, form a continuous system of special neuromuscular tissue between the base of the auricles and the entire ventricular musculature of both ventricles

1 6 DIAGRAM OF CONDUCTION SYSTEM AND ITS RELATION TO OTHER PART OF HEART

The *auriculoventricular node* together with the bundle was described in 1893 by His after whom the bundle is named In the same year Kent[3] also described muscular connections between the auricles and the ventricles It remained for Tawara[4] in 1906 to give the first complete description of the system emphasizing the importance of the node The latter structure is thus named after him

The auriculoventricular node is located in the lower posterior part of the right side of the interauricular septum It consists of markedly interlaced fibers that are more slender than the auricular muscle fibers

and of numerous nerve fibers and ganglion cells It is in contact with the vagal and the sympathetic nerves

The node is continued by the *bundle*, which runs almost horizontally forward to the left and downward to the membranous portion of the interventricular septum, where it divides into two branches The left branch perforates the membranous part of the septum and runs downward along the upper border of the muscular part of the septum Here it subdivides into two main strands running in the subendocardial layer to the papillary muscle, and spreading out in a fanlike manner, forming an arborization

The right branch runs along the right side of the interventricular septum subendocardially and through the moderator band reaches the papillary muscles of the right ventricle where it breaks up into a similar arborization

The arborizations of both sides consist of complicated networks of fibers known as the Purkinje system, that spread out in the subendocardial layers of both ventricles and extend through the myocardial structure almost to the pericardium

Although the right and left bundle branches and their arborizations supply predominantly their respective ventricles a certain amount of communication exists between the peripheral extensions of the two arborizations This was shown by Robb and Robb who found that some of the muscle layers of each ventricle overlap and partially cover both ventricles Their Purkinje fibers thus come into close contact

The blood supply to the conduction apparatus according to Gross[6] is derived from branches of the right and left coronary arteries The posterior and anterior interventricular arteries which spring from the right and left coronary arteries respectively supply the node In 92 per cent of cases the main supply is derived from the right coronary through the ramus septi fibrosi and the ramus septi ventriculorum

The anterior ramification of the left bundle branch gets its arterial supply from the perforating branches of the anterior descending branch of the left coronary artery the posterior ramifications from the right coronary artery

The right bundle branch gets its main arterial supply from the perforating branches of the anterior descending branch of the left coronary artery A small portion of the right arborization system receives anastomosing arterioles having their origin in the right coronary artery

ELECTROPHYSIOLOGIC BASIS

The physiologic principles of the electrocardiogram is based on the following theory

When a body cell is at rest it is in a polarized state. That is, the outer surface of the cell membrane has positive (+) electric charges and *the inner surface has negative* (−) charges (figure 7). *Whether or not* the entire inner portion of the cell also has these negative charges is not known. These positive and negative electric charges of the cell membrane thus form a chain of doublets along the entire cell membrane and



Fig. 7. *Hypothetical cell in a polarized state.* The outer surface of the cell membrane has (+) charges and the inner surface (−) charges, thus forming a chain of doublets along the entire cell membrane.

keep the cell in an isopotential state and resistant to ionic migration. When the cell is stimulated to activity, the dielectric state is broken at the point of stimulation, allowing the negative charges to reach the surface and set up a chain of discharges of the adjacent doublets in successive fashion until the entire surface of the cell becomes discharged (figure 8). This process is known as *depolarization*. Recovery of the cell

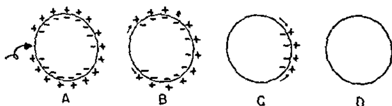


Fig. 8. Stimulation of cell at the point shown by arrow in section A. The electric [illegible] broken at that point and negative charges reach the surface and set up a progressive discharge of adjacent doublets, shown in A, B, C, until the entire chain is [illegible] discharged, D.

takes place in the same order, starting from the point that was first stimulated and spreading to the other end of the cell. Doublets are again gradually covering the membrane of the cell in that order, finally covering the entire membrane again. This process is known as *repolarization* (figure 9).

If we could place a hypothetical single body cell in a container of conducting fluid, such as physiologic saline solution, the electric charges

Bulletin de la Soc Franç de Derm et de Syph (Strasbourg Reunion) 1935 VII p 1174 with full references

Lymphatics According to Sampson Handley the lymph vessels begin as blind channels *forming the core of each skin papilla* These papillary lymphatics pass perpendicularly through the skin and then enter a connecting vessel which drains a small number of neighbouring papillæ The general appearance of such a group resembles a stag horn with the antlers *This unit drains a small roundish area of skin*

The communicating vessel passes deeply into the subcutaneous tissue where others may join it Just above the deep fascia the vessels enter into a network which constitutes a sort of lymphatic pool This deep network lying on the fascia extends over the whole of the cutaneous system and from time to time afferent vessels which have valves pass from it to the lymphatic glands

The **nerves of the skin** are (1) medullated nerve fibres terminating in touch corpuscles at the apices of the papillæ and in the Paccinian bodies in the hypoderm, (2) non medullated fibres which pass through the corium and apparently end in the stratum mucosum of the epidermis The innervation of the glomus has been referred to above Many nerves of the skin terminate in several types of end organ, the different functions of which are not fully understood The *Paccinian corpuscles* or corpuscles of Vater are found in large numbers in the subcutaneous tissue of the palms and soles and the pulp of the fingers and toes It is believed that they are designed to estimate deep pressure But they are also found in the skin of the prepuce and labia majora

The organs of *Golgi* are supposed to determine slight pressures They are also found in peri articular and tendinous tissue

The organs of *Ruffini* are minute bodies found in the upper part of the panniculus adiposus Their exact function is not clear

The *tactile corpuscles* of Meissner (or Wagner) are found chiefly in the papillæ but also in other parts of the corium They vary in number in different areas but are most numerous on the terminal phalanges of the fingers

The *touch cells* of Merkel or Ranvier are found in the epidermis They occur chiefly where the tactile corpuscles are less numerous *e g* on the skin of the abdomen But Ranvier showed that they were also present at the finger tips and on the sole

Woollard has described fine fibrils 3 μ in diameter in the sub epidermis just under the stratum Malpighii which finally become more tenuous and assume a dotted irregular varicose form Some end in a closed loop and others end as naked neurofibrillæ with no sheath of any kind Such terminal fibrils may be associated with the more highly organised fibrils ending in Meissner corpuscles or in relation to hairs Krause s end bulbs and the like Woollard believes these fibrils belong to the pain system and that they are also protective to the more complex nerve endings

Muscle Striated muscle is found in the platysma of the face and neck The *arrectores pilorum* are of smooth muscle they run obliquely downwards to the root of the hair and have the power of erecting the hair The skin of the scrotum also contains smooth muscle

In the *yellow* races the hair is usually black and straight The hair shaft is round

In the woolly haired *negro* there are peculiar features On section the shaft appears as a flat ellipse Owing to the shape of the follicles each hair has an axial twist the shaft being rotated to produce a watch spring effect Further the follicles are grouped and this grouping with clear interspaces gives the pepper corn appearance of the arrangement of the hair in the ulotrichian races This woolly characteristic is a dominant feature in hybrids with the negro and is seen in the South Sea Islanders Hottentots Filippinos etc It tends to persist in spite of cross breeding

The hair of Europeans and others living in temperate regions grows more rapidly than normal while they reside in the tropics

Red hair The nature of the pigment causing the red colour is still undetermined It is said to be due to oxidation of melanin

In many young negroes the hair has a decidedly reddish tinge which disappears as they approach puberty

Lanugo hair is present on the bodies of Congo pygmies and may be found sparsely on the scalps of Bushmen

The Nails

The nail is an epidermic plate lying on the nail bed At the proximal end is the matrix the distal edge of which is visible as a pale crescent the lunula The ungual plate is composed of flattened keratinised cells The matrix consists of cells similar in their arrangement to those of the corpus mucosum elsewhere deep cylindrical cells then polygonal cell flattening as they approach the surface The stratum granulosum is replaced by a fine granular layer containing keratohyalin the onychogenic substance

The nail bed is covered by a mucous layer there are no papillæ in the dermis but longitudinal ridges and furrows take their place The lunula or white crescent at the root is less translucent than the rest of the body of the nail The thin skin which forms over the surface of the base the eponychium is the remains of the epidermic covering which envelops the whole nail in the fœtus Like the hair the nails of people living in temperate regions grow more rapidly while they reside in the tropics The nail of the negro is like his hand long and narrow Melanin is present but is mainly in the deep layers

FUNCTIONS OF THE SKIN

It is perhaps not always realised that the skin is one of the most important organs of the body and that it has many functions

(1) It protects the underlying tissues by the horny layer of the epidermis and by its pigment
(2) It receives and transmits sensory impressions of various types to the central nervous system (The integument is the largest sensory organ)
(3) It regulates the heat of the body
(4) It excretes water and waste products
(5) It secretes sebum to assist in the protection of the epidermis

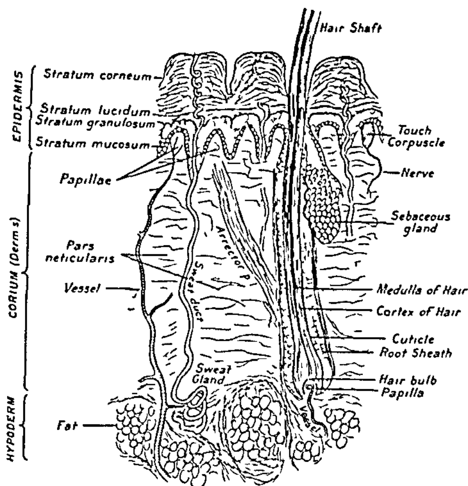


Fig — Vertical section of the skin (diagrammatic)

the medulla Near the papilla the medullary cells resemble prickle cells but later these cells shrink leaving air spaces

Foetal hair is of the lanugo type In the normal hair change after birth these are replaced by new hairs which on the scalp are of adult type but mostly elsewhere are of the downy pre natal type

Hair trends The distribution of the trends of the hair have been extensively studied Apart from the differences due to sex which are manifested at puberty (e g the upward extension of the pubic hair in the male) it is found that the main trends on the trunk are based on whorls in each axilla Thence the streams pass up to the head and neck down the arms across the thorax and abdomen and down the legs The general direction of the hair is determined by *the obliquity of the follicles in the skin*

On the scalp the base is a whorl (or two whorls) over the occiput and whorls at the medial end of the eyebrows There are innumerable patterns which may be distinctive even in the infant at birth There is far greater variety in the trends of the hair than in Langer s lines on the skin and Wood Jones found no relationship between them

Racial differences The colour of the hair varies most in the *white* races and is often a strong family character The hair may be straight, ... or curling On transverse section the shaft is oval

In the *yellow* races the hair is usually black and straight. The hair shaft is round.

In the woolly haired *negro* there are peculiar features. On section the shaft appears as a flat ellipse. Owing to the shape of the follicles each hair has an axial twist, the shaft being rotated to produce a watch spring effect. Further the follicles are grouped, and this grouping with clear interspaces gives the "pepper corn" appearance of the arrangement of the hair in the ulotrichian races. This "woolly" characteristic is a dominant feature in hybrids with the negro and is seen in the South Sea Islanders, Hottentots, Filippinos, etc. It tends to persist in spite of cross breeding.

The hair of Europeans and others living in temperate regions grows more rapidly than normal while they reside in the tropics.

Red hair. The nature of the pigment causing the red colour is still undetermined. It is said to be due to oxidation of melanin.

In many young negroes the hair has a decidedly reddish tinge which disappears as they approach puberty.

Lanugo hair is present on the bodies of Congo pygmies and may be found sparsely on the scalps of Bushmen.

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The nail bed is covered by a mucous layer; there are no papillæ in the dermis, but longitudinal ridges and furrows take their place. The lunula or white crescent at the root is less translucent than the rest of the body of the nail. The thin skin which forms over the surface of the base, the eponychium, is the remains of the epidermic covering which envelops the whole nail in the fœtus. Like the hair, the nails of people living in temperate regions grow more rapidly while they reside in the tropics. The nail of the negro is like his hand, long and narrow. Melanin is present but is mainly in the deep layers.

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(2) It receives and transmits sensory impressions of various types to the central nervous system. (The integument is the largest sensory organ.)
(3) It regulates the heat of the body.
(4) It excretes water and waste products.
(5) It secretes sebum to assist in the protection of the epidermis.

region on the nipples and the hypogastrium. They vary in number with age and race and have a sexual significance, their function beginning at puberty. They are said not to lose their function with advancing age. They are thrice as numerous in the skin of the negro as in the European. They confer a distinctive odour on the individual which is especially evident (to the European) in the African native.

Whitehouse, Hancock and Haldane found that during rest under ordinary conditions of temperature the greater part of the moisture given off by the skin passed through by osmosis or diffusion. The osmotic passage increases rapidly as the temperature rises, and thus regulates body temperature. The osmosis of water is the only available mechanism in the rare cases where the sweat glands are absent and failure of sweating in hot climates predisposes to heat exhaustion. Thus subjects with xeroderma are ill adapted for service in the tropics.

Sweating occurs in response to emotion, mental effort or to sensory stimulation and the areas most affected are the palms, the soles and the axillæ. The relationship of sweating to the integrity of the peripheral nerves is dealt with on p. 20. Kuno has shown that a considerable proportion of morphologically normal sweat glands are inactive and cannot be stimulated to activity by high temperatures or by pilocarpine. Their function is a matter of doubt.

The sweat is a colourless, opalescent fluid with a saltish taste and a special odour. It gives an acid reaction on the greater part of the surface but in certain areas is neutral or slightly alkaline (*vide* pH of the skin, p. 15). *It is alkaline in the herbivora. Its specific gravity is 1.001 to* 1,010. Sodium chloride is always present and other alkaline salts. Fats, fatty acids and cholesterol are constant and it appears to be certain that they are excreted by the sweat glands as well as by the sebaceous glands. Globules of fat have been demonstrated in the coiled tubes and duct. Lactic acid is found after exercise. Urea is said to be present under normal conditions and undoubtedly occurs in considerable amount in renal insufficiency. Glucose is excreted in the sweat in diabetes and in severe cases may appear as "frost" on the skin.

When the temperature of the atmosphere is at or above that of the skin a litre of water (35 oz.) must be evaporated hourly. Miners working with a wet bulb thermometer at 85° F. lose two pints of water per hour, the maximum recorded being 14 pints. Sir Charles Martin calculated that from one third to two thirds of an ounce of sodium chloride may be lost in twenty-four hours.

While thermal sweating is more or less general, emotion, fear and other nervous influences chiefly affect the sudoriparous glands of the axillæ, palms and soles. Paralysis of the central sympathetic in man causes sweating first on the paralysed side. Similarly, diseases of the spinal cord may be attended by hyperidrosis and also by anidrosis. *After plastic operations* the grafted skin does not sweat until it has regained sensation.

Grafts of a patient's own skin—known as "autoplasts"—used to cover a denuded surface will survive when the conditions are favourable. Grafts taken from another individual—"homoplasts"—may show at first every indication of having "taken," including vascularisation, but in almost every instance in from ten days to three weeks the tissues of the host will have dealt with the

homoplast as a foreign body and it will be cast off The only exceptions are the rare cases in which the graft has been taken from the subject s monozygomatic twin

The composition of the blood materially affects diaphoresis decrease of oxygen or increase of carbonic acid in the blood producing sweating It is interesting to remark that all febrile states are not attended with excessive activity of the sudoriparous glands *cf* the dry skin of pneumonia and the sweating of acute rheumatism

Sweating is influenced also by certain drugs camphor acetate of ammonia and pilocarpine stimulate while atropine depresses the activity of the glands

The sebaceous glands (Lat *sebum* tallow) are single or lobulated sacs in connection with the hair follicles They are present in every part of the skin except the palms and soles and the dorsal aspect of the terminal phalanges Sebaceous glands are most numerous in the middle line of the chest and back and on the scalp nose lips and chin The ceruminous glands of the ear and the Meibomian glands of the eyelid the areolar glands of the mamma are modified sebaceous glands The sebaceous glands lie in the angle between the muscles of the hair and the hair follicles and these unstriped muscles on contraction compress the sebaceous glands The sebum so far as it can be analysed apart from the sweat appears to consist of esters and high molecular alcohols with some protein and inorganic salts and a small proportion of true fats

The minute sebaceous glands which appear after puberty on the lips and buccal mucosa of some subjects are sometimes called Fordyce s disease They have a yellowish tint and are more common in the male than in the female They have no pathological significance but may be mistaken for the papules of lichen planus

The activity of the sebaceous glands depends entirely on their vascular supply The secretion is small in childhood but increases greatly at puberty persisting through adult life with marked variation in different subjects and diminishing if atrophy of the glands occurs in the senile There appears to be a direct connection between the internal secretion of the genital glands and the sebaceous glands (*vide* Acne vulgaris p 210) Diets rich in fats and carbohydrates have an influence on the activity of these glands in the human subject

The function of the sebaceous glands is to provide a fatty material which in combination with products of the epidermal cells gives protection to the surface and suppleness to the skin and hair

Prolonged soaking of the skin in water or the use of alkaline solutions removes this greasy protective layer and renders the skin more vulnerable to outside influences This is more marked on the palms and soles because these parts do not possess sebaceous glands

pH of the normal skin Marchionini of Ankara has made a prolonged study of the surface reactions of the skin and has produced evidence that these reactions play an important part in the localisation of infections The acidity or alkalinity of the surface varies with the amount and nature of the sweat and of the secretion of the sebaceous glands Eccrine sweat gives an acid reaction varying on the average between pH6 and pH4 Marchionini and his colleagues however found that there are lacunæ or

as they call them "physiological gaps" in the acid envelope, which determine the localisation of bacterial and mycotic infections The areas involved and their average pH are —

Axilla Centre 7 13, margin 6 58

Male genital area Hairy part 5 22, inguinal fold 6 31

Female genital area Hairy part 5 47, inguinal fold 6 16 labia majora 6 37

Anal region 6 31

Feet Interdigital clefts 6 84 heel 7 84 Sole middle 6 86 anterior part 7 23 arch (inner side) 5 98

At the edges of the "physiological gaps" the reactions gradually shade into those of the surrounding areas

Regions with feebly acid, neutral or alkaline reactions, like the anal, the axillary and inguinal folds and the toes provide the optimum physico chemical milieu for the growth of bacteria and fungi which flourish at or about the neutral point For instance, Marchionini found that the *epidermophyton inguinale* grew best on a medium with the pH 6 8 to 7 2 The most resistant parts to microbic and fungus invasion are the surface of the forearm, the thigh the abdominal wall, and the inner side of the sole of the foot

Pathogenic fungi are highly resistant to acid, hence they grow well on Sabouraud s medium which is too acid for bacteria

It is of interest to note that the bactericidal power of the skin is, as Marchionini found experimentally and Colebrook clinically more potent against the pyogenic streptococci than other organisms

MICRO-ORGANISMS ON THE NORMAL SKIN

Micro organisms on the normal skin have been divided into 'resident and transient' The residents are chiefly harmless saprophytes staphylococci diphtheroids and micro cocci *Staphylococcus aureus* is not uncommonly present The transient invaders are *Streptococcus pyogenes* *Staphylococcus aureus* members of the coliform group and the *Coryne bacterium diphtheriae*

Efficient applications for sterilising the skin surface are —

Iodine 2 per cent in 4 per cent potassium iodide in water

Liquor antisepticus (Nat Form)

Chloramine 1 in 100

Dettol (chloroxylenol) 1 in 20

One of these applied for two minutes after washing the hands in hot water and household soap (which is itself bactericidal) for four minutes is held to be adequate preparation of the surgeon's hands before operation It is essential that the hands are free from breaches of surface and are healthy A suitable hand lotion or cream should be used regularly

Absorption by the skin There seems to be no doubt that salts dissolved in water cannot be absorbed unless the normal fatty material in the epidermis has been removed Absorption of course may take place easily through wounds or abrasions, or conditions in which the epidermal covering has been removed Experiment has shown that when unguentum hydrargyri is rubbed into the skin, as in the treatment of syphilis minute

globules of mercury are pushed into the orifices of the sebaceous glands and sweat glands Emulsifying bases greatly increase absorption by the skin

SENSORY FUNCTIONS OF THE SKIN

The skin is the most extensive sensory organ Like the cerebral cortex and the special visual auditory and olfactory organs it is evolved from the epiblast It may therefore be regarded as Comel says as a peripheral brain

The impressions conveyed by it to the sensorium are of varied types which may be classed as informative and protective We are ignorant of the mechanism by which they are transmitted or interpreted It has been suggested that there is a single physico chemical stimulus but whether this is Lewis s H substance or hydrogen ions or some metabolite is an unsolved problem

Electrical or physico electrical phenomena Emotions especially those engendered by discomfort or threatened danger produce a change in the electrical properties of the skin This change is essentially a lowering of the resistance to the passage of a current (Féré) The change appears to be due to increased activity of the sweat glands

Cutaneous reflexes The most noteworthy is the pilo motor in which erection of the hair papillæ goose flesh may follow cold or fright Erection of the scalp hairs in terror is another example These reactions do not occur if the innervation be impaired Reflex action of the cutaneous glands is seen in the sweating of fear and anger The pallor and blushing of fear shame etc are similar reactions

The impressions conveyed to the sensorium are —

(i) Touch It seems probable that Meissner s corpuscles are chiefly concerned in the tactile sense This sense includes the appreciation of contact pressure vibration and tickling Its acuity varies remarkably in different areas This has been estimated by altering the stimuli applied and by the recognition of double stimuli measured by the points of a pair of compasses The tip of the tongue shows the most acute discrimination then come the palmar aspects of the terminal phalanges of the fingers the least sensitive parts being the back and the upper segments of the limbs

(ii) Pain It has been estimated that there are a million points on the surface which can register sensations and a large number of them give impressions of pain Woollard s work (p 18) suggests that the epidermis itself is not the special site of painful impressions and that the fine net work of fibrils which he described as lying in the sub epidermis is the receiving mechanism The sensation of pain is an important part in the protective or nocifensor system (*vide* p 19) The referred hyper algesia associated with visceral disease may also be protective

(iii) Itching The immediate cause of itching is a change in the surface tension between the prickle layers of the epidermis This is obvious in the irritation produced by an insect bite and a further example is the intense pruritus of obstructive jaundice due to the presence of bile salts in the skin Paralysis of the sensation of pain leads to the cessation of itching Kenedy has shown that total arrest of the circulation abolishes the sensation even though the pruriginous substance may be present in the skin Itching returns when the circulation is restored This author believes that there

is a substance "P" which may be produced locally and is carried to the epidermis when the circulation is intact Kenedy holds that this substance is not Lewis's "H" substance His experiments confirm the opinion of Torok that the receptors and nerves for the sensations of pain and itching are identical

Itching is therefore not entirely pathological it is a protective function *directing attention to internal or external irritants (vide infra* "The Scratch Reflex")

(iv) **Heat and cold** The sensibility of the skin to thermic impressions differs in different parts and is associated with the heat regulating mechanism While it is generally believed that the skin is unable to appreciate absolute temperatures it has a fine discrimination of variations in heat It would appear that it is more important to protect the body against cold than against excessive heat and it has been found that there are 150 000 cold "*points*" *on the surface as against 30 000 points registering* heat

Sensory Nerves

Head and Rivers divided sensory nerves into two classes —

(1) **Protopathic,** which are concerned with pain and deep sensibility and the recognition of extremes of temperature below 20° C and above 40° C The areas overlap and the sensations are not localised accurately When the nerve has been cut the protopathic fibres regenerate rapidly

(2) **Epicritic,** which discriminate light touch and appreciation of *temperature between 20° and 40°* C *Localisation is very accurate* as estimated by compass points, and the size of objects is recognised The areas do not overlap and regeneration of the nerve after section is slower

The distinction between epicritic and protopathic impressions may be useful clinically but Trotter and others have doubted the existence of two kinds of nerve This view is supported by Comel s exhaustive investigations

It is interesting here to note that the protopathic areas can be differentiated by *experiments* on the sweating reaction Many examples have been studied after war injuries Total interruption of a nerve causes complete loss of sweating within the autonomous zone of the nerve Areas of overlap show more or less hypohidrosis Great variations have been found in the areas of cutaneous supply and in the extent to which adjacent nerves overlap Guttmann has shown that the sodium salt of quinizarin (a red brown dye) diluted with bicarbonate of soda and rice starch and rubbed gently into the skin to fill up the orifices of the sweat glands *turns a dark blue violet colour* when *sweating* is induced by hot tea and aspirin The experiment takes from fifteen to forty five minutes and excellent photographs can be made defining the protopathic zones

Intra epidermal nerve endings Woollard has added *considerably* to our knowledge of the relationship between nerve endings and the sensation of pain Much of the epidermis may be shaved away without exciting a severe painful sensation Pain is relatively poorly localised *It* radiates widely and lacks discriminating value

The apparatus which Woollard believes to be directly concerned with painful sensations consists of very fine fibrils In the deeper layers of the dermis they are about 3μ in diameter As they approach the surface

they are even finer and frequently form a closed loop whose limbs have a dotted varicose appearance A number of the fibrils however are simple and have no sheath of any kind They have been observed in relation to Meissner s corpuscles hairs Pacceinian corpuscles Krause bulbs etc It has been suggested that they are part of the sympathetic system but Woollard holds that they are more probably part of the pain system and act as protective nerves to the more complex skin organs Experiments afford evidence that the anatomical situation of pain begins at the sub epidermal level The discovery at that level of a plexus and endings in sufficient abundance and of the appropriate character reinforces this conclusion

Woollard therefore regards the epidermis as being accessory to touch and this is especially the case in regions where tactile sensation is highly developed

The Nocifensor System Sir Thomas Lewis has given this name to the nervous mechanism in which he has shown is concerned with the protection of the skin through its cutaneous reactions This mechanism belongs to the posterior root system but is distinct from the nerves carrying sensory impressions All the reactions depend upon the integrity of an axon reflex They are due in part to the release of a reactine or reactines which act locally upon the nerve endings These bodies of which Lewis s H substance is one are believed to be secreted by skin cells as the result of injury or from nerve stimulation There is also a possibility that acetylcholine which is less stable than the H substance may also be liberated

There are five types of reaction —

(1) Spreading hyperalgesia from local injury A tiny crush of the skin as by nipping with forceps causes the development of a small area of hyperalgesia in a few seconds This area gradually spreads and at the end of ten to twenty minutes reaches its full extent The area is usually ovoid and may be 20 cm in its long axis It lasts for several hours in the majority of subjects This hyperalgesia is not primarily referred from the brain or spinal cord for it occurs in a part of the area which has been rendered anaesthetic by novocain Under such circumstances the crush is not felt but the hyperalgesia is present when the nerve recovers from the anaesthetic The reaction is due to a *local* nervous mechanism It is quite unconnected with the sympathetic for it occurs in persons whose cervical ganglia have been removed

( ) Hyperalgesia from distal stimulation of cutaneous nerves The stimulus is applied by the faradic current and an exactly similar reaction occurs There are the same small rapid response and the more slowly spreading hyperalgesia which lasts for several hours If the nerve be blocked by a little anaesthetic the hyperalgesia does not develop though the central nervous system receives the sensory stimulus If the nerve be stimulated below the block there is no pain but when the block recovers the usual area of hyperalgesia is found In this connection see Causalgia p 11-

(3) The Triple Response or Flare Reaction A localised injury or irritation of the skin is followed by (i) a primary dilatation of the capillaries a red spot or line (ii) increased permeability of these capillaries producing an elevation of the epidermis by plasma the wheal and (iii) the flare a wide spread dilatation of the arterioles A good example of the triple response is seen after a mosquito bite Initial redness is followed by a wheal which is succeeded by the flare A similar reaction may be produced by pricking the epidermis with a needle through a spot of histamine solution The reaction is held to be due to the production by the epidermal cells of a substance allied to histamine which has been called the H substance by Lewis The flare reaction is produced by a local axon reflex It will be observed that the triple response may be looked upon as the vascular counterpart of the alterations in sensibility described under (1) and (2)

(4) The 'Antidromic' Flush It has been demonstrated that all the fibres in the posterior roots are not afferent Cell stations in the posterior root ganglia emit fibres which pass into the cord and send collaterals out again through neighbouring posterior roots to the periphery Their function cannot, therefore be sensory As they *run in an opposite direction to the normal sensory impulses* they have been called 'antidromic' The antidromic flush can be produced experimentally in animals by stimulating the vaso dilator fibres in the posterior roots

(5) Heat Regulation by the Glomus We have already described the glomus a minute specialised coil of vessels which is provided with a highly developed nervous mechanism and which is present in large numbers in those *areas of the skin* which are peculiarly exposed to changes of temperature The minute coils are arterio venous anastomoses whose nervous mechanism has the power of switching the circulation through them in preference to the more leisurely passage through the capillaries *Under stimulation by cold this* mechanism comes into play and may be demonstrated by putting the finger into ice cold water For some time after the immersion the temperature of the finger as estimated by a thermal junction falls to the level of the surrounding medium After an interval the mechanism of the glomus comes into play and the temperature of the finger gradually rises to a considerably higher level than the water The difference may be as much as 9 F to 18 F This reaction lasts *from ten to thirty minutes when the finger cools again and the process is repeated* Similar reactions follow exposure to lesser degrees of cold This is again a protective reaction Its underlying mechanism is nervous It occurs in man after section of a mixed nerve to the skin until the nerve degenerates It is present when the sympathetic is degenerated

Lewis says that it is tempting to ascribe all the nocifensor reactions to the same system of nerves and though there is much to support such a conclusion *it is not yet possible to do so with certainty*

With some stimuli *e g* that of ultra violet light a reaction is delayed for some hours presumably because the release of the activating substance here depends upon a slowly developing injury

Trophic nerves It has long been held that there is a specific set of nerve fibres which are concerned with the nutrition of the skin It is now regarded as unlikely that any nerves influence the nutrition or growth of tissues except by altering the blood supply or by controlling the functions of the tissue The part played by the nocifensor system in this connection is obvious

The sympathetic and the skin Pre ganglionic section *i e* the cutting of the white rami before they reach the ganglion cells causes an immediate flushing of the skin and a rise of temperature which may be as much as 8°–10° C Sweating is completely abolished The elevation of the temperature and the flush diminish in five or six days but the hyperthermia will remain for many years after the operation, especially in the lower extremities A very temporary flushing and rise of temperature may develop on the corresponding area on the opposite side

The scratch reflex Itching of physiological or pathological origin is protective and one manifestation of this defensive function is the Scratch Reflex" The value of the scratch reflex as a protective is particularly evident in countries where the natives especially children are constantly irritated by flies, etc It is automatic and may occur even during sleep The sensation of itching varies very much in different individuals The skin of the verminous tramp is far less sensitive than that of the clean person It must be remembered that itching may be a purely psychic phenomenon, and that the thought of a parasite may be sufficient to

excite pruritus in perfectly healthy subjects Some persons appear to be able to excite itching in certain parts by thought alone

In dermatology itching is a far commoner symptom than pain and the scratch reflex may become highly developed in neurotic subjects as will be seen in discussing the neurodermatoses It is often a special feature in persons who are addicted to cocaine At times the evident relief and sensual pleasure obtained in scratching are obvious manifestations of more serious psychological disturbances and here the scratch reflex may be regarded as a perversion

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be of great assistance to the student in the reading of the subsequent chapters

Elementary cutaneous lesions are *primary* and *secondary* and in examining an eruption it is important to determine which is the primary element In many cases this is fairly easy in others the history and the observation of an intelligent patient will be helpful but where there are extensive secondary changes it may be exceedingly difficult to be certain what has been the primary manifestation With the growth of experience these difficulties diminish and there is one thing which should never be omitted and that is the examination of the *whole* of the affected area and of the whole surface whenever this is practicable for it is highly probable that at some part often the periphery the primary lesion unaltered by retrograde or evolutionary change will be found

Primary Lesions

Macules are circumscribed non elevated alterations in the colour of the skin of any size or shape Examples the eruption of scarlet fever the macular syphilide the port wine mark

Papules are solid or apparently solid elevations of the skin not larger than a pea (0 5 cm) Examples the shotty papules of variola flat papules of lichen planus flat warts

Nodules are larger swellings but not exceeding a hazel nut in size (about a centimetre) They commonly involve the true skin Examples nodular syphilide nodular leprosy

Nodules were often called tubercles but for descriptive purposes this term is better avoided to prevent confusion with lesions caused by Koch s bacillus

Tumours as their name implies may be (1) neoplasms malignant or benign or (2) large inflammatory swellings *e g* granulomata occurring occasionally in tuberculosis and in a number of tropical affections of the skin

Wheals or pomphi are circumscribed swellings caused by hyperæmia and œdema and characterised by a white centre and red margin Examples the nettle sting urticaria

Vesicles are circumscribed swellings of the skin smaller than a pea (0 5 cm) containing plasma or (rarely) lymph Examples the eruption of chicken pox and herpes zoster

Bullæ blisters or blebs are larger elevations of the epidermis containing plasma or blood Examples blisters caused by a scald pemphigus

Pustules are swellings of the skin containing pus Examples common acne abscess whitlow

Secondary Lesions

The primary lesions mentioned above may pass by evolution or devolution into other forms or they may be modified by super added conditions Thus a vesicle may dry up to form a crust or scab or it may pass into a pustule The secondary lesions are important because they are often the most prominent feature when a case comes under observation

CHAPTER II

MORPHOLOGY OF SKIN DISEASES

The student beginning the study of dermatology is frequently bewildered and may actually be deterred from its pursuit by the complexity of its nomenclature. The terminology is however the least important part of the subject and we cannot too strongly advise the novice to get rid of the common idea that a knowledge of skin diseases consists in the application of polysyllabic appellations and in attaching to each of them one or more appropriate prescriptions. The study of cutaneous affections is much more interesting and affords an admirable training in observation. In no other branch of medicine can so much be learned from the objective phenomena. The lesions lie spread out before the eye and with the assistance of a lens and a microscope their most important characters can be studied. Exactitude of description is to be aimed at and to attain this it is a useful practice to sit down in front of patients and to write out in *simple language* what is to be seen. Diagrams should also be made of the distribution of the lesions and if the observer can use his pencil he will derive great help from sketches. Systematic observation of cases in the out patient clinic and in the wards will soon make the student familiar with the essential features of the commoner skin diseases and the nomenclature will come gradually and easily.

The objective phenomena are also valuable aids in determining appropriate treatment. Certain diseases of the skin are reactions to local irritation others are caused by animal or vegetable parasites while some depend upon microbic infection and toxic conditions of the blood. In these we are often able to effect a cure by the removal or destruction of the cause. Thus an eruption of scales may be due to a fungus as in tinea versicolor and the organism can be destroyed by the application of parasiticidal remedies. Another scaly affection is caused by the *treponema pallidum*. Salvarsan given internally causes the disappearance of the lesions by its action on the parasite in the blood.

But we are still ignorant of the causation of some of the commonest skin diseases. Treatment under such conditions unless absolutely empirical must be symptomatic and to be successful the symptomatic treatment of cutaneous affections depends upon the accurate observation of the elementary lesions. Suppose we have before us an eruption of scaly patches whose cause is unknown. We may treat the condition empirically or rationally. Rational treatment will direct the application of remedies which are known to influence the keratin formation of the epidermis. Such remedies may be applied locally or administered internally. Our success will depend upon the exact interpretation of the objective phenomena and not upon the name or label which we attach to the disease.

To facilitate accurate description it is necessary to know the meaning of certain terms which are applied to the elementary lesions of skin disease and a little time spent in mastering the short vocabulary which follows will

not congestive and the history of their congenital origin is usually obtainable

Erythemata are described as macular scarlatiniform morbilliform diffuse polymorphous etc according to their distribution and characters The names are sufficiently distinctive and require no further definition

Causes of erythema Erythema may be active or passive In the active form the colour is bright red and the surface feels hot to the touch The redness is due to active dilatation of the capillaries In the passive variety the colour is livid or purplish and the surface is cold The cause is stasis in the small blood vessels In some conditions passive congestion takes a reticular form from the arrangement of the venous plexuses (*vide* Livedo p 304)

Active erythema occurs as a result of local irritation from friction pressure heat cold light X rays radium and from some chemicals including drugs locally applied (Chapters XVI XVII) and from irritating plants and toxins

It is also a prominent feature in the exanthemata the eruption of syphilis (p 534) leprosy (p 509) and in septic and toxic diseases The importance of toxæmia in the causation is discussed in Chapter XIII Erythema may also follow the internal administration of a number of drugs (p 283)

Passive erythema occurs on the extremities in some apparently healthy children and adolescents and in cachectic conditions particularly in tuberculosis The term acrocyanosis (Gk *akros* terminal) is applied to passive congestion of the extremities A lividity of a reticular character is frequently described as livedo Passive erythema is intensified by cold weather

Erythemato squamous eruptions (Gk *squama* scale) In a considerable number of skin affections the lesions are characterised by congestion and by scaling Psoriasis is perhaps the commonest of these The lesions are congested areas covered with masses of silvery scales (p 230) In the squamous form of seborrhœic dermatitis the scales are greasy (p 204) In pityriasis rosea (p 224) the patches are rose coloured and covered with fine scales Some forms of tinea and erythrasma form scaly patches on a congested base (p 396) Lichen planus lupus erythematosus mycosis fungoides and certain toxic and drug eruptions particularly those due to toxic metals *e g* gold bismuth arsenic not infrequently show erythemato squamous eruptions The squamous syphilide has scaly and congestive characters (p 537) Some rare chronic conditions of this type simulating psoriasis are called parapsoriasis (p 239)

Erythrodermia is the name given to *generalised* persistent inflammatory conditions of the skin attended with scaling which is often profuse a regular exfoliation The erythrodermias may be primary or secondary The primary forms are classed as exfoliative dermatitis and pityriasis rubra (p 275) Generalised redness with scaling may also occur in the premycosic stage of mycosis fungoides (p 135) and in certain blood affections including leukæmia (p 141) The secondary conditions may follow eczema psoriasis and pemphigus foliaceus (p 654) and the administration of certain drugs (p 284)

Urticaria (Lat *urtica* nettle) is a condition of localised hyperæmia with œdema It is characterised by the formation of wheals or pomphi

Scales or squamæ are dry exfoliations of the epidermis Example the lesion of psoriasis is covered with a silvery scale

Crusts or scabs are dried masses of exudation and other products of inflammatory action Example the scab of common impetigo

Excoriations are superficial lesions characterised by removal of the epidermis Examples abrasions caused by injury or scratching

Fissures or rhagades are linear breaches of the surface extending usually to the papillary layer They occur in the normal fissures of the skin and rarely leave scars Examples the cracks on the hands associated with "chapping" and chronic eczema

Ulcers are circumscribed lesions characterised by loss of substance of the corium or true skin Examples varicose ulcer, gummatous ulcer

Scars or cicatrices are new formations of connective tissue to replace loss of substance of the corium It is important to remember that scars *only* occur when the true skin is involved Examples cicatrices of burns and of syphilitic ulcers

Stains are local discolorations of the skin from (1) extravasation of blood (2) diapedesis in inflammation (3) from fixed eruptions (4) in xanthomatosis, (5) deposition of minerals and (6) the local application of pigments and certain drugs Examples the stains left by a bruise by a syphilitic eruption and by picric acid

"Ide" The syllable 'ide' denotes an eruption usually symmetrical and localised or generalised indicating specific allergic sensitisation to some blood borne toxin or infection *e g* syphilide epidermophytide *streptococcide etc* Darier *introduced the term tuberculide in relation* to such eruptions which he attributed to tuberculous disease Sometimes the suffix is attached to the type of reaction *e g* eczematide In America the suffix is commonly spelled "id

'Ide must be distinguished from 'oid meaning like" as in diphtheroid typhoid fungoid

General Morphology

Assuming that the vocabulary of terms is mastered it will now be useful for the student to consider the general morphology or forms of eruption and other morbid conditions of the skin In this section we shall indicate the essential features of each group and with a view to helping those unfamiliar with the subject we have appended to the brief description of the form of eruption under consideration a list of the important *conditions* in which it occurs with references to the chapters in which the details are discussed We believe that such an arrangement will be of use also to those who have lost touch with the skin clinic and that a summary of the important affections characterised by erythema or papules to take examples will refresh the memory and assist in diagnosis

Erythema (Gk *eruthema* be red) is the name given to redness of the skin of a congestive character The colour disappears under pressure but returns when the pressure is removed This feature distinguishes erythema from hæmorrhage into the skin which is unaffected by compression Cutaneous nævi are excluded from the erythemata because they are

irritation (p 370) and in the reaction of the skin to heat cold and actinic light (p 305) Vesicles are characteristic of eczema and eczematised conditions (p 147) They also occur in scabies (p 357) and in some forms of ringworm (p 396) either as a response to infection or as an ide reaction (p 424) Cheiropompholyx is a vesicular eruption (p 162)

Grouped vesicles on an erythematous base are seen in zoster (p 621) and herpes (p 617) and in association with bullæ in dermatitis herpetiformis (p 645) The eruption of strophulus may be vesicular or bullous as well as papular (p 267) Sudamina are dealt with among the affections of the sweat glands (p 727)

Bullous eruptions (Lat *bulla* bubble) Blisters or bullæ are caused by the elevation of the epidermis by serum or blood They may be the result of trauma or of irritation by heat cold and light or by contact with certain plants or vesicant drugs (p 343) In the congenital anomaly called epidermolysis bullosa blisters develop in response to slight degrees of pressure or friction (p 47) Coccal infection causes bullous impetigo including the so called pemphigus neonatorum (p 445) while the treponema is responsible for the bullous congenital syphilide (p 553)

The most important group of bullous eruptions are the varieties of pemphigus (p 649) dermatitis herpetiformis (p 645) and hydroa (p 812) With the exception of the acute malignant form of pemphigus which is believed to be microbic the etiology of these affections is unknown

Circulating toxins produce bullæ as an epiphenomenon in some forms of erythema (p 244) and urticaria (p 259) and closely allied to these are the bullous drug eruptions (p 283) In Morvan s disease and in nerve leprosy bullous lesions also occur (p 112) A bulla also is situated at the orifice of exit of the Guinea worm (p 380)

Pustular eruptions Pustular affections of the skin are primary or secondary The lesions may form in the superficial layers of the epidermis or in the deeper structures and in the follicles (see p 453) Pustules may be of any size rounded or oval in shape tense or flaccid and they are often surrounded by a red areola In many cases when the lesions first come under observation there is already a transformation into crusts or scabs

The eruptions of variola and vaccinia (and occasionally varicella) become pustular The commonest causes however are streptococcal and staphylococcal infection Impetigo (p 443) and ecthyma (p 447) are instances of primary coccogenic conditions but many forms of irritant dermatitis eczema and itching eruptions become impetiginised *i e* secondarily infected with pus cocci (p 153) Some varieties of ringworm (p 396) are characterised by the formation of pustules Psoriasis and certain toxic eruptions *e g* pustular bacterides may present pustules usually sterile and affecting the extremities

Ulceration Ulcers vary very much in their characters They may be rounded oval polycyclic reniform etc The edge may be well or ill defined steep shelving punched out undermined or everted There may be infiltration while the base may be irregular covered with granulations or with a slough and the discharge may be clear purulent or bloody Ulcers run an acute or chronic course They occur as a result of physical irritation—from injury heat cold X rays and chemicals (Chapter XVI) from microbic infection as in soft sores (p 588) syphilis

It occurs as the result of local irritation, *e g*, the nettle sting and the bite of the bug and of trauma, such as the blow of a whip or cane It frequently follows the ingestion of decomposing or unsuitable food Drugs, *e g*, copaiba, aspirin, sera and enemata may also cause it (p 257) It is common as a psycho neurosis but is rarely seen in organic nervous disease It is an occasional feature of the *premycosic stage of mycosis fungoides* (p 137)

Cutaneous hæmorrhages are characterised by red macules which do not disappear on pressure At first they are bright red then purplish and finally brown or greenish in tint They occur as the result of injury *including the bites of insects, or from venous congestion* as in varicose veins but an eruption composed of hæmorrhages into the skin is usually caused by circulating microbes or toxins, as in the hæmorrhagic fevers cerebro spinal meningitis, septicæmia and toxæmia Cutaneous hæmorrhages are also seen in certain "blood diseases" pernicious anæmia *leukæmia scurvy, hæmophilia and in grave visceral disease* especially of the liver and kidneys The name "purpura" is applied to many of these eruptions and if the cause is known they are classed as symptomatic purpura, while those of unknown origin are grouped as idiopathic purpura (p 264)

Papular eruptions Papules may be inflammatory or non inflammatory Those which are confined to the appendages of the skin are dealt with later (see Follicular Affections, p 706)

Papules may be of the normal colour of the skin or red or brown in tint They are described as flat conical acuminate pointed hemispherical etc according to their form

Non inflammatory papules occur as congenital anomalies—certain *nævi and moles* as evidence of senile degeneration—senile keratoma or of localised degeneration of the skin or of the deposition in the skin of degeneration products—xanthoma and from contagion—the common wart and molluscum contagiosum and as new growths benign or malignant

Inflammatory papules appear in variola varicella and vaccinia and some other fevers *e g* measles typhus typhoid and in syphilis (p 534) tuberculosis (p 496) and leprosy (p 509) In some forms of ringworm the lesions consist of a ring of papules (p 396) Pustules often begin as papules

Papules are characteristic of lichen planus (p 178) of the itching *eruptions* classed as *prurigo* (p 171) and of strophulus or gum rash of infants (p 262) They also occur in certain varieties of eczema (p 152) and erythema (p 244) and from local irritation Both the local application and internal administration of certain drugs may be attended by a papular eruption (p 283)

Diffuse papular conditions occur as a sequel to chronic irritation chronic eczema prurigo and many itching diseases To these secondary developments the term "lichenisation" is often given (p 154 296)

Vesicular eruptions are produced by an effusion of *plasma in the* epidermis In extremely rare cases the fluid is lymph (Lymphangioma *and Lymph varix*, p 57)

Vesicles are essential features of the eruption of variola vaccinia and varicella They occur in dermatitis due to many forms of chemical

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Increase of pigment may be local or general It may be —

(1) Congenital pigmented nævus or mole

(2) Due to external irritation by light (freckles bronzing) heat (ephelis ab igne) X rays trauma oil of bergamot etc

(3) Due to chronic inflammation and ulceration of the skin *e g* varicose and syphilitic ulcer

(4) A part of general disorders of endocrine metabolic or vascular origin and some avitaminoses *e g* Addison s disease Graves s disease myxœdema jaundice diabetes hæmochromatosis uterine and ovarian disease chloasma of pregnancy etc

(5) Caused by a deposition of metals and dyes (usually drugs) in the skin These vary in tint Such may occur from the prolonged administration of arsenic silver bismuth and gold therapeutically and in certain occupations in which absorption may occur locally or through the alimentary tract

(6) Staining due to industry or other cause

Follicular lesions A cutaneous affection may start in and be limited to the follicles In many forms of staphylococcal infection the organisms attack the hair follicles *e g* impetigo of Bockhart boils carbuncle sycosis folliculitis dermatitis capillitii (Chapter XXI)

Fungi often invade the hair follicles and also the hairs themselves *e g* tinea favus (p 412)

The sebaceous glands may be over active as in oily seborrhœa (p 200) or they may become infected *e g* acne (p 210) tuberculous folliculitis (p 498) and syphilitic folliculitis (p 536)

Folliculitis of the acne type may be caused by chlorine tar and oil of cade applied locally and may follow the internal administration of bromides and iodides (p 286) Drugs or toxins excreted by the follicles may produce a punctate erythematous follicular eruption

Horny plugs are seen at the mouths of the hair follicles in vitamin deficiency (p 77) keratosis pilaris (p 706) lichen pilaris (p 180) keratosis follicularis (Darier) (p 712) and in pityriasis rubra pilaris (p 710) Horny plugs in sebaceous follicles occur in Lupus erythematosus (p 253)

Affections of the hair nails and sweat glands are dealt with in Chapter XXX

Diseases of the hypoderm A number of affections of the subcutaneous tissue come under the observation of the dermatologist They commonly begin about the blood vessels and are doubtless often of embolic origin Such conditions occur in connection with varicose veins phlebitis and periphlebitis Syphilitic phlebitis produces a chronic form of hypodermic swelling one form of syphilitic node (p 545) Tuberculosis is the cause of the erythema induratum of Bazin (p 499) and various toxins infections and drugs may cause the nodose swellings classed as erythema nodosum (p 246) Subcutaneous fatty and other tumours are also often brought to the notice of those practising in skin diseases

Practical Hints on Diagnosis

(1) The skin may be affected by factors (*a*) from without (physical chemical biological etc) and (*b*) from within by nutritional and

(p 518) tuberculosis (p 472) leprosy (p 505), ecthyma (p 447) farcy (p 469), in certain mycotic infections sporotrichosis (p 436) blastomycosis (p 434) mycetoma (p 432) and actinomycosis (p 429) Impaired circulation is the cause of the varicose ulcer, and perforating ulcer is due to nervous disease (p 113) In many tumours characteristic ulceration occurs—*e g* rodent ulcer (p 679) epithelioma (p 674) and mycosis fungoides (p 135) Phagedænic ulceration is common in the tropics (p 93)

Gangrene is local death of the skin and may result from traumatism from compression moisture and infection as in the bed sores of myelitis and the like It may also be caused by heat, cold X rays and high frequency currents, and the local action of chemicals, the caustic acids alkalies corrosive sublimate chloride of zinc and arsenic Gangrene of the extremities is caused by obliteration of the vessels in Raynaud's disease, in diabetes, in periarteritis nodosa and in ergotism (p 122) it occurs in syringomyelia and in nerve leprosy as a tropic phenomenon Necrosis of the skin is occasionally produced by direct bacterial infection as in dermatitis gangrenosa infantum (p 451)

Cutaneous atrophy may be idiopathic or cicatricial It may be localised or diffuse The commonest forms are, naturally cicatricial Cicatricial *atrophy occurs after burns scalds, chronic X ray and radium dermatitis* and chemical irritation It may follow any deep abscess necrosis or caseation *e g* acne vulgaris syphilis, follicular tuberculides varicella and *zoster It is the common sequel of ulceration of any kind, e g syphilitic* lupoid, leprous ulcers In lupus erythematosus and the dry forms of lupus vulgaris it is the result of interstitial inflammation It occurs rarely in *lichen planus certain nervous diseases in endocrine disorders, and idio*pathically Stretching of the skin is the cause of striæ atrophicæ (Chapter XXVIII)

***Sclerosis of the skin** (Gk skleros hard) is characterised by thickening* and toughening of the integument which may feel like a piece of ivory It may be generalised as in sclerodermia or localised, as in sclerodermia, *morphœa sclerodactylia and sclerodermatomyositis, a group of conditions* related clinically if not etiologically (p 192) and in the tropical disease called ainhum (p 664)

Facial hemiatrophy is an interesting form probably of nervous origin Pachydermatous conditions occur in chronic congestive conditions notably in connection with varicose veins and in chronic lymphatic obstruction *e g elephantiasis*

Hypertrophy of the skin occurs in elephantiasis and pachydermia (p 127) in the rare condition known as trophœdema (p 58) in rhinoscleroma *(p 516), and rhinophyma (p 220)*

Dyschromias Dyschromias are discolorations of the skin They may be due to increase, diminution or absence of the normal pigment or to a deposit of *hæmosiderin or certain metals* Dyschromias may be local or general

Absence of pigment may be congenital as in albinism It may follow certain *infections, e g,* syphilis yaws pinta It is occasionally seen in avitaminosis, but in some cases, *e g* vitiligo (leucodermia) the cause is unknown

eruption of the hands and feet in children is usually caused by scabies or papular urticaria

(19) A scaly patchy baldness of the scalp in children should be regarded as ringworm until a careful examination proves otherwise

(20) Look for enlargement of the lymphatic glands and spleen in purpura and examine the blood

(21) The development of a non inflamed papule or nodule on the skin especially in patients over 40 should make one suspect malignant disease

endocrine, nervous disorders, and by poisons and toxins circulating in the blood

(2) Whenever possible examine the whole skin surface at any rate examine every part of an eruption Its distribution may be the important diagnostic feature, and in outlying areas early *stages of the condition may* be the deciding feature

(3) An examination of the tongue buccal mucosa and the nails may assist diagnosis

(4) Consider sex and age Many skin diseases are relatively peculiar to one sex or age period *e g* Bazin s disease erythrocyanosis crurum rosacea acne strophulus and tinea tonsurans

(5) A skin eruption which is asymmetrical or local is most likely to be caused by an external influence Tertiary syphilis accounts for certain exceptions

(6) *Hyperkeratosis of one palm or one sole should suggest late syphilis*

(7) When sepsis is symmetrical it is usually secondary to chronic parasitic infestation or to eczema or urticaria

(8) *A bilateral or symmetrical dermatosis may sometimes be due to* equal exposure of the two sides to extraneous influences but is *more likely* to be produced by an internal cause

(9) In dermatoses of the hands and upper extremities in persons engaged in manual labour, think first of 'occupational dermatitis" Inquire into the *exact* nature of the employment Do not be misled by the statement that a man works in a chemical factory He may be a lorry driver and never touch an irritant

(10) Unless you are satisfied that a dermatosis is of external origin, examine the urine You may be rewarded by finding glycosuria

(11) Never forget the possibility of syphilis especially when what appears to be a common type of eruption occurs in an unusual position Remember Hutchinson s dictum ' Syphilis is the great imitator" Do *not be misled by the fact that a luetic eruption may sometimes itch*

(12) A lesion on the penis may be herpes or scabies but do not forget syphilis and spare no effort to confirm or to exclude venereal disease

(13) *Whenever confronted by* an eruption of urticarial type or resembling scarlatina or measles or even generalised eczema enquire carefully as to whether the patient has recently been taking drugs Many of the more recently introduced remedies cause skin eruptions

(14) In every case of an itching eruption, no matter what is the social condition of the patient think first of scabies the itch

(15) Scabies and other parasitic diseases are likely to affect more than one member of the family

(16) Do not forget that pediculi capitis may be the cause of pus coccal infections about the head and neck in children and females of any class Pediculi *frequently account for chronic enlargement* of the cervical glands in children

(17) A bullous eruption in children is far more likely to be a bullous urticaria than dermatitis herpetiformis or pemphigus

'Common diseases most commonly occur '

(18) Think first of fungous infection in any case of an irritating or vesicular dermatosis affecting the feet and toes An itching vesicular

are dark brown or nearly black. The palms and soles are rarely scaly, but the epidermis is obviously thickened, the normal fissures are exaggerated and on palpation the surface is smooth and leathery.

After scarlatinal desquamation the xerodermatous skin may become normal temporarily, but the hyperkeratosis soon recurs.

Except in the flexures the skin is always dry and perspiration is imperceptible. In the hot weather there is an amelioration of the condition, doubtless because there is some sweating. When sweat glands are absent (ectodermal defect) the subjects suffer much discomfort in the hot weather and they are ill adapted for tropical climates. Itching is sometimes a troublesome feature.



FIG. 1. Ichthyosis.

Ichthyosis and xerodermia appear in the first year and increase in severity as a rule from the fifth to the fifteenth year, and then remain stationary, persisting throughout life. The ichthyotic skin is peculiarly vulnerable. Chapping quickly follows exposure to chill or easterly winds, and mild degrees of irritation frequently produce eczema. The roughness of the skin causes the adhesion of particles of dust and dirt, especially on the lower limbs of young children, and the mother often complains that it is impossible to keep the parts clean. Ichthyosis is a serious disadvantage in renal disease as the measures adopted to induce diaphoresis are of little effect.

Diagnosis. The history of a rough skin over the greater part of the body dating from soon after birth makes the diagnosis in a well developed case easy, but there are slight degrees of xerodermia which may be easily overlooked. The history of repeated attacks of dermatitis or eczema occurring in the cold weather should lead to a careful examination of the whole surface. The xerodermatous skin is not inflammatory, and on removing the scales the subjacent skin is found to be normal in appearance. Ichthyosis hystrix is a localised condition, the rough skin being in lines or sheets (*vide* p. 37).

scaliness to one in which the scaling fully merits the term ichthyosis The furrows are more distinct than in the normal epidermis, and there may be some roughness, resembling goose flesh from keratosis or prominence of the hair follicles particularly on the limbs (keratosis pilaris) In more marked cases there are branny scales of a dirty brown colour most developed on the extensor surfaces of the limbs The face is dry and rough, and radiating cracks are often seen about the orifices Although



Fig 3 Ichthyosis

this form may affect the whole of the epidermis the skin of the flexures, axillæ front of the elbows popliteal spaces and groins is often smooth and supple The scalp is usually covered with a fine branny scurf Anomalous distributions of the ichthyosis are not uncommon and the face palms and soles may be quite unaffected

In the severe forms of ichthyosis there are scales of various sizes diamond shaped or polygonal, resembling fish scales The squamæ may be thin or thick and in the worst cases the condition is greatly disfiguring The hair in such instances is thin and scanty Sometimes the scales

Keratolysis is a very rare condition in which the whole epidermis is shed at intervals sometimes yearly very much in the way the snake sheds its skin

Ichthyosis Hystrix or Linear Nævus (Nævus unius lateris)

(Lat *hystrix* hedgehog)

Linear nævus is the name given to congenital lines or streaks composed of warty elevations covered with scales The *localisation of the lesions* and their usually limited character demand that these anomalies should be classed as nævi

Etiology The cause is unknown

Pathology The unilateral arrangement of the bands and streaks — which however is not essential as there is a group of cases in which the lesions are bilateral although not symmetrical —suggests that the affection is of nervous origin but in many cases the lesions do not follow the lines or areas of nerves Some suggest that Voigt s lines are the determining factor but the streaks are often quite irregular The individual lesions consist of thickening of the prickle layer and hyperkeratosis with hypertrophy of the papillary layer A marked feature of the mass of hyperkeratosis is the persistence of nucleated cells The elastic tissue is atrophic and there is often evidence of inflammation in the true skin *Dilatation* of the sweat ducts may occur

Clinical features The condition may be noticed at birth but often does not attract attention until the child is a few years old The area



FIG . Ichthyosis hystrix linear nævus in an African

involved may gradually increase for some years and it is wise to warn the child s parents of this tendency The lesions may be insignificant streaks an inch or so long or bands of irregular width extending the whole length

Varieties of ichthyosis In the lamellar type the infant is covered in a thin shining layer resembling varnish and after several peelings the skin may become normal In the variety which begins at or soon *after birth with erythema thickening and scaling develop (congenital ichthyosiform erythrodermia of Brocq)* (p 276) A severe form ichthyosis fœtalis, will be described later Degrees of scaling and redness and age *at onset are the distinguishing features of these types*

Prognosis The disease persists through life It is worse in the second decade and tends to become stationary, and even less severe in adult life *Treatment affords great relief but the condition is incurable*

Treatment is purely palliative Thyroid extract administered internally will sometimes improve the condition, but as the effect is transitory this treatment should be reserved for troublesome phases such as occur in cold dry weather Large doses of vitamin A administered parenterally often give relief and suggest that the underlying cause may be a congenital inability to utilise the vitamin Constant local treatment is important Bathing is useful to remove the scales The ordinary warm bath or baths with one drachm of liquor picis carbonis to the gallon may be given Frequent washing aggravates xeroderma by removing fat from the skin A superfatted soap should be used In the mild cases rubbing the whole surface once daily with equal parts of glycerine and water is all that is necessary to keep down the scaliness and impart smoothness and suppleness to the skin In the more severe forms oily preparations are to be preferred Equal parts of olive oil and lanoline rubbed in after a daily bath cleared off all the scales in the case represented in Fig 4 Natural fats alone are quickly absorbed by the skin and it is very advantageous to dilute these with sufficient liquid paraffin or vaseline to maintain suppleness Constant attention is required *or relapses will occur To prevent* chapping, washing with warm water and above all, careful drying are required The eczematous lesions may respond to the usual zinc and tar paste, but *if weeping is slight or absent emollient ointments and liniments* are better, being more greasy than paste

The following preparations have been found useful —

℞ *Ol olivæ*	℞ *Glycerin* 1 oz
Aq calcis aa 2 parts	Tr benzoin m 24
Lanolin	Pulv tragacanth gr 30
Paraffin molle aa 3 parts	Pulv ac boric gr 60
Ft cremor	Aq rosemari to 6 oz
	Ft lotio

Ichthyosis Fœtalis Harlequin Fœtus

Harlequin fœtus is usually described as a form of ichthyosis but on very unsatisfactory grounds It is a rare condition occurring in the infant The skin is tough and like parchment with large deep cracks or furrows forming plates The lips and eyelids are stiff and *the child is unable to suck* Death occurs a few days after birth In some instances the infant is stillborn There is a milder degree of this affection in which the scales are thin and ultimately *peel off leaving a normal* smooth surface By some the latter form is believed to be the persistence of the epitrichial layer which should be shed by the fœtus at the seventh month

to be preferred and they should be excised or destroyed by diathermy the Paquelin or electric cautery or by radium or solid carbonic acid

No doubt excision followed if necessary by skin grafting gives the best cosmetic result but keloid is apt to develop in the scar

Acneiform Nævus

A girl seen at the London hospital clinic was the subject of a remarkable congenital anomaly which affected the sebaceous glands mainly on the left half of the body neck axilla and upper arm (Fig 6) The face was also involved In this type of nævus the lesions which are congenital are of the comedo type depressed cavities from a pin head to a millet seed in size filled with black greasy material which can be expressed They may atrophy leaving pitted scars Comedones acneiform lesions and scars have been reported in other cases of nævus unius lateris

Tylosis (Keratodermia palmaris et plantaris)

Tylosis is an hereditary and familial hyperkeratosis of the palms and soles

Etiology Several members of a family may be affected and the

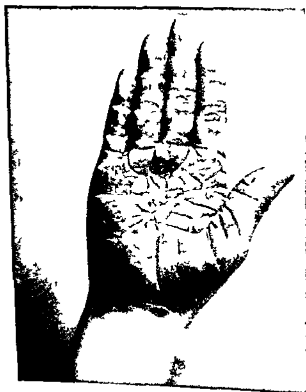


Fig 7 Tylosis The left palm was similarly affected The affection was known to have occurred in four generations

of a limb or round the trunk, often with a segmental distribution. As a rule the streaks or bands are unilateral, hence the name nævus unius lateris. Each streak is composed of closely set small warty swellings covered with scales. It may be almost the colour of the surrounding skin or brownish or blackish in tint. In a case seen recently a linear streak of reddish papules extended from the right internal malleolus to the right labium majus and was mistaken for lichen planus. In another a jet black macular streak ran down the mid line of the abdomen stopping sharply at the linea alba as though drawn with ruler and pen. Ormsby pictures a warty variety of similar distribution. Fig 5 depicts an exaggerated condition in an African. Occasionally squamous celled carcinoma may develop in later life upon such nævi. Rarely the nævoid condition may involve the soft palate as well as the skin of the face.

In the rare condition known as Ichthyosis hystrix gravior (Porcupine skin disease) there is an extraordinary development of warty masses



Fig 6. Nævus unius lateris. Acneiform lesions with many comedones.

involving a large part but never the whole of the integument. In one family this affected the males for four generations.

Bullæ are sometimes a rare feature of ichthyosis.

Treatment. Unless giving trouble by their position the linear nævi may be left alone. Caustics will thin them down but radical treatment is



Fig 8 Honeycomb nævus

and Savatard found some benefit from thorium X but does not recommend it and no treatment is likely to have much affect

REFERENCE—L SAVATARD 1913 *Brit Jour Derm and Syph* 55 11 Figures and Literature

Porokeratosis (Mibelli and Respighi) (Gk *poros* pore *keras* horn) A chronic spreading hyperkeratosis affecting the palms soles extensor surfaces of the hands and feet the adjacent parts of the limbs and rarely other parts including the buccal mucosa The lesions are usually symmetrical (Fig 9)

Etiology The cause is unknown Males are more commonly affected than females The disease appears in childhood and Gilchrist recorded eleven cases in four generations of one family Reviewing the reported cases Cockayne finds fourteen families in which more than one generation was affected and in these were ninety cases of porokeratosis

Pathology The horny layer of the epidermis and the upper part of the

condition has been known to occur through four or five generations The "Maladie de Meleda" occurring in an island off Dalmatia is an endemic and hereditary affection of this type

Pathology The condition is a hyperkeratosis

Clinical features The palms and soles are symmetrically affected being covered with thick horny yellowish plates, with well defined margins The normal fissures are exaggerated In some cases the skin is darker, often brown or nearly black *the fissures producing a mosaic like appear*ance or a rough surface resembling the bark of a tree The movement of the parts is impeded and the fissures are often painful In one case under Sequeira s care a squamous cancer developed on a tylosis

Occasionally tylosis is associated with extensive ichthyosis hystrix *This association was present in two children in one family* attending the London Hospital clinic The father also suffered from tylosis In another child whose family had been free from cutaneous anomalies the tylosis and ichthyosis hystrix were associated with bullous lesions of the type known as epidermolysis bullosa Although associated defects are *rare a considerable variety have been reported* including mental defects abnormalities of the hair and nails hypogenitalism and multiple lipomata

The disease is generally noticed when the subject is about four or five years of age and persists through life Amelioration is sometimes seen in the summer

Treatment is palliative only The thickened epidermis may be softened by plasters of salicylic acid or by the application of lotions of the same drug We do not advise treatment by X rays A temporary improvement may follow their use but repetition leads to cicatricial atrophy with telangiectases and grave risk of carcinoma

Keratodermia punctata This is probably a nævoid keratodermia *arising at any age in either sex* characterised by diffuse and circumscribed hyperkeratoses somewhat resembling the keratoses seen in chronic arsenical poisoning The warty lesions may fall out to leave small pits in the skin

Honeycomb atrophy (Folliculitis ulerythematosa reticulata atropho*dermia reticulata symmetrica*) This is a rare, sometimes familial congenital anomaly characterised by a reticular atrophy on both cheeks It is usually first noticed as an erythema with comedones and horny follicular plugs between the ages of five and ten years In some cases there has been extension on to the forehead It runs a slow course and in adult life tends *to improve* slowly The reticular character of the atrophy is a special feature (Fig 8 p 41) It has been seen associated with lichen spinulosus folliculitis decalvans and with epidermal cysts

The condition may be mistaken for the results of *acne vulgaris but* papules and pustules and seborrhœa do not occur as a primary cause

Histologically, the hair follicles are found to be distorted acanthotic and hyperkeratotic Horn cysts derived from the hair follicles are found in the dermis The sebaceous glands are undeveloped The atrophy is due to degeneration of collagen

Treatment It is probably best to leave the condition alone as it tends though slowly to improve Small doses of X rays have been employed

trauma Healing may be delayed or the lesions may persist and appear as indolent pyogenic granulomata

Rarely the eruption arises in adult life

Etiology The disease sometimes runs in families for generations and several members of the same family may be affected In other cases heredity cannot be traced

Pathology Nothing definite is known as to the cause Elliot and others have found in the apparently normal skin of subjects of epidermolysis degeneration changes in the basal epithelial cells The bullæ are formed by the exudation of serum and occasionally blood and by some authors an embryonic condition in the vessels is believed to be the essential feature

Clinical features The disease appears in infancy and may persist to adult life Very rarely the anomaly is present at birth The parents notice that slight friction and pressure which normally would have no effect on the skin produce blisters The parts most exposed to trauma or



Fig 10 Epidermolysis bullosa Bullæ and atrophic skin about the knee

pressure viz the knees ankles feet elbows wrists and knuckles are consequently affected The mucous membranes may also be involved The blebs appear with great rapidity and vary in size from a pea to half a walnut or larger Most of them contain serous fluid but blisters containing blood are not uncommon The bullæ on rupture dry up quickly and there may be some atrophy of the skin with reddish purple discoloration at first and such smooth shiny patches on the elbows and knees may be mistaken for psoriasis In these discoloured atrophic patches white pin head sized shining spots form and these on microscopical examination are found to be epidermal cysts Such cysts formerly miscalled milia occur after other bullous eruptions but in this form of epidermolysis bullosa they are more numerous than in any other condition (Figs 11 and 12)

The finger and toe nails are atrophic and in some instances consist merely of small horny pegs In others the nails are yellowish or dirty brown and opaque and do not reach the ends of the digits

In none of our cases has there been any eosinophilia or other noteworthy blood change

rete are affected. There is considerable increase of these layers (hyperkeratosis) and the sweat glands of the skin are involved in the process, hence the name Porokeratosis.

Clinical features. The eruption begins with a number of warty papules on the extremities, but occasionally the face and the genital organs are affected. *The papule is conical with a crater-like depression in which is a* horny plug. The papules slowly increase to form irregular circinate spots or plaques of variable size and shape. The plaque may be only half an inch in diameter or it may involve the whole of the affected limb. The early patches are circular but the older ones have an irregular outline. The edge in the fully developed plaque is well defined, consisting of a row of papules which may be at the bottom of a furrow or groove, presenting a narrow corneous seam. The centre of the area may be atrophic or scaly

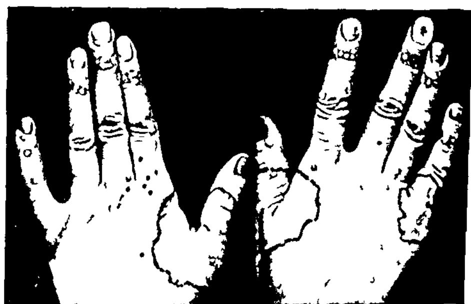


Fig. 9. Porokeratosis of Mibelli. Photograph kindly lent by Sir James Galloway.

but it is sometimes of normal appearance. Occasionally papular or ringed lesions reappear on the central area. The nail may be involved, an opaque area forming by extension from a finger lesion. The buccal mucosa *and palate may be affected and here the rim resembles a* fine silk thread. The disease begins in childhood and progresses slowly for years.

Treatment. Patches of limited area have been successfully treated by electrolysis. Ingram found Grenz rays effective (*dosage 800 r*).

Epidermolysis bullosa

(Gk. *lúo*, break up)

The simple condition, which was formerly called congenital traumatic pemphigus, is a *developmental anomaly in which slight traumatism causes* the formation of bullæ.

Other rarer varieties, dominant or recessive types, have been described as anomalous dystrophies in which *bullæ appear without preceding*

trauma Healing may be delayed or the lesions may persist and appear as indolent pyogenic granulomata

Rarely the eruption arises in adult life

Etiology The disease sometimes runs in families for generations and several members of the same family may be affected In other cases heredity cannot be traced

Pathology Nothing definite is known as to the cause Elliot and others have found in the apparently normal skin of subjects of epidermolysis degeneration changes in the basal epithelial cells The bullæ are formed by the exudation of serum and occasionally blood and by some authors an embryonic condition in the vessels is believed to be the essential feature

Clinical features The disease appears in infancy and may persist to adult life Very rarely the anomaly is present at birth The parents notice that slight friction and pressure which normally would have no effect on the skin produce blisters The parts most exposed to trauma or



FIG 10 Epidermolysis bullosa Blebs and atrophic skin about the knee

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The finger and toe nails are atrophic and in some instances consist merely of small horny pegs In others the nails are yellowish or dirty brown and opaque and do not reach the ends of the digits

In none of our cases has there been any eosinophilia or other noteworthy blood change



Fig 11 Epidermolysis bullosa Atrophic nails and epidermal cysts in sites of old bullæ

The prognosis is usually bad We have seen improvement at the approach of adolescence but in severe cases the patient is crippled for life



Fig 12 Epidermic cysts from case of epidermolysis bullosa Micro photograph of section

every kind of work being impossible on account of the formation of blisters on slight provocation

Treatment is purely palliative Drugs have no influence on the disease and all that can be done is to protect the parts and apply soothing ointments to the blisters on rupture

CONGENITAL PIGMENTARY ANOMALIES

The pigment of the skin may be congenitally absent as in albinism or in excess as in pigmented moles

Albinism

A congenital absence of the pigment of the skin hair and choroid Albinism is more common in the tropics than in temperate zones and consanguinity and hereditary transmission have been recorded It is held to be caused by a single recessive gene It may be associated with mental defect

Albinism is usually complete Total absence of pigment is exceedingly rare The skin of the albino is white or pale pink the hair is very fine and of a white or pale yellow colour The iris is commonly pink and the pupil shows the red reflection from the non pigmented choroid In the negro the red reflex is less evident than in white subjects Photophobia and nystagmus are constant symptoms

The albino in the tropics suffers severely from solar dermatitis on exposed parts Lichenisation is common and sepsis is a frequent complication Squamous carcinoma may develop on the face and exposed parts (Fig 141 depicts a rapidly growing cancer in an albino African woman)

Partial albinism produces a piebald appearance It may be inherited It may take the form of a white blaze on the forehead or white streaks down the back chest or abdomen It is seen rarely on the glans penis

Histologically the only change in albinism is the absence of melanin

Prognosis Albinism is incurable Relief to the patient may be given by the application of emollients containing 1 per cent of sulphate of quinine Dark glasses should be worn to protect the eyes

Mongolian Blue Spots

A congenital condition characterised by dark bluish spots on the lower sacral region and elsewhere

This anomaly probably an atavistic phenomenon being vestigial mesodermal pigmentation which is predominant in animals occurs in the majority of newly born babies of the Mongolian race but is relatively rare in white persons Bloch however stated that the deposits can always be found in the corium at birth

The spots are rounded or oval from one fifth of an inch to five inches in diameter They are well defined or shade into the colour of the surrounding skin The surface is normal and the colour does not disappear on pressure There may be one macule or several The sacral region and

buttocks are most commonly affected but the spots may occur elsewhere. The spots are present at birth and usually disappear by the fourth year.



FIG. 13. Mongolian blue spot in Chinese infant in midline above gluteal cleft. The other swelling is a cavernous nævus.

Histologically the blue spot is found to be due to fusiform cells containing melanotic granules in the corium. The cells are large and branched and give a positive "dopa" reaction.

No treatment is necessary.

Urticaria pigmentosa

A rare affection characterised by the formation of macules (Lat. *urtica*, nettle) papules or nodules which may become urticarial when rubbed.

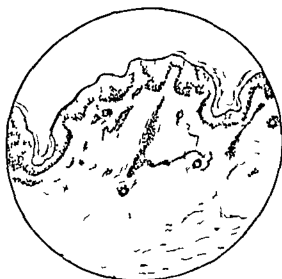


FIG. 14. Urticaria pigmentosa (× 75) showing infiltration of mast cells along the vessels.

Etiology The disease usually begins in early infancy in more than 70 per cent during the first year of life Males are twice as frequently affected as females There is no evidence of heredity but occasionally two members of a family may be affected The cause is unknown and the eruption is compatible with perfect general health Cases of similar type occurring in adults have been put on record but there is some doubt whether the disease is the same

Pathology There is in the corium especially about the vessels infiltration composed entirely of mast cells which are stellate and with Pappenheim s stain show a pale blue nucleus and deep red granules in the cytoplasm The infiltration is placed superficially and there is some increased pigment in the basal cells of the epidermis In one rare type cells which stain similarly but are rounded and not stellate are situated deeply in the corium and hypoderm and there is no increased pigmentation A few mast cells are seen in normal skin and in chronic inflammatory infiltrates

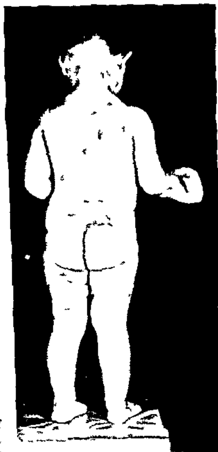


FIG 1 Urticaria pigmentosa

Clinical features The eruption begins with urticaria papules or red macules usually during the first year of life sometimes soon after or rarely at birth though exceptionally it may not develop until after puberty Recurrent attacks of urticaria in which the lesions appear in the same sites continue and at last the characteristic macules are formed These lesions are persistent and are usually scattered thickly over the whole of the surface or limited to certain areas In rare cases the macules are very few in number There are two types of eruption macules and nodules and in some cases both forms are present The macular cases are by far the more common (Plate 1 Fig 1a) The spots are pigmented patches varying in size of a buff to a brown colour which on exposure to the air or on slight friction become turgid and wheal like It is usually easy to provoke factitious urticaria over the macules by stroking the skin There is often itching but this is not constant and rarely severe The neck and the trunk are more affected than the limbs and scalp but no part of the body is exempt

In the rare type, the lesions are nodules of a yellow colour closely resembling the tumours of congenital xanthoma but differing from them in the presence of urticaria and of itching. The pigmented spots and nodules persist for years but often about puberty they begin to clear up and ultimately disappear. It is interesting to note that the lymphatic glands may be generally enlarged, more than can be accounted for by the scratching of the patient.

Urticaria pigmentosa in adults. The similar eruption which occurs in adults is characterised by mildness or absence of the urticarial lesions. The eruption is macular and the individual spots are of small size. Mast cells may be absent.

Diagnosis. Urticaria pigmentosa is often mistaken for secondary syphilis in adults. We have known cases in which repeated serological tests have been made.

Prognosis. Treatment is of little avail, and one can only hope for the disappearance of the eruption at puberty.

Treatment. The itching may be relieved by the measures recommended for urticaria. Dr Radcliffe Crocker advocated small doses of arsenic internally, but there is rarely much benefit from any form of internal treatment. Any gastro-intestinal derangement should receive attention.

Nævus pigmentosus (Pigmented Mole)

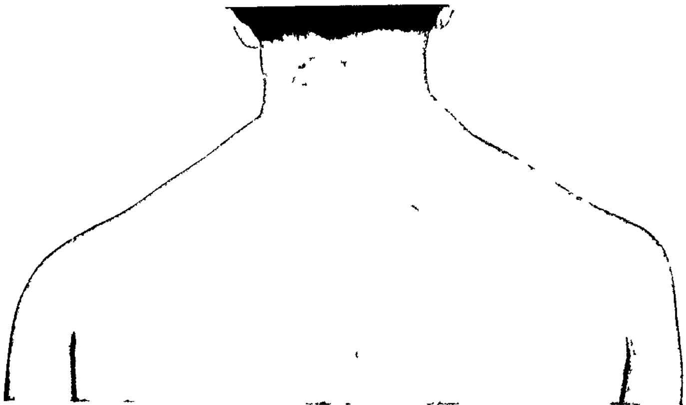
The etiology of pigmented moles is unknown. Maternal impressions are often invoked as causes. Some believe that racial intermixture is a factor.

Pathology. Sections show a collection of regularly arranged columns and nests of cells resembling epidermal cells in the corium. The corium being a mesoblastic structure, it would appear that the epiblastic cells are abnormally included in it in the process of development. According to Dawson invasion of the corium by epidermal cells occurs much later. He claims that histological studies have shown the proliferation of cells spindle shaped or branching and containing pigment, in the deeper layers of the epidermis and rete pegs. Prickles are lost and widening of intercellular spaces permits the extension of connective tissue from the corium thus isolating groups of epidermal cells amongst which are the branched pigmented cells. The extent and colour of the resulting nævus depends upon the atrophy, quiescence or proliferation of these cells. Masson maintains that these nævoid cells are of nerve origin. Hypertrophy of the hair follicles is common.

Clinical features. Pigmented moles may be present at birth and occur on any part of the body. They may be single or multiple, and of all sizes from a pin's head to large tracts covering one half of the head or extensive areas of the trunk and limbs. The mole is a circumscribed spot or patch of brownish or brownish black skin, usually covered with hair. The hairs may be fine and downy or strong and stiff. The surface of the mole may be smooth or irregular and warty, especially if there be also hypertrophy of other elements of the skin.

Prognosis. Except for the disfigurement the pigmented moles are of

PLATE I



URTICARIA PIGMENTOSA. Boy aged nine. Showing widely spread pigment spots. They extended up to the scalp



Fig 16 Pigmented mole which ultimately became covered with long hair

little significance until middle life is reached There is however a risk of their becoming malignant in later adult life but this risk is undoubtedly



Fig 17 Pigmented hairy mole



Fig 18 After excision and skin graft

small because pigmented moles are very common and melanotic carcinomata arising in such naevi are relatively rare. When such malignant *development occurs rapid metastases are to be expected.*

Treatment. Removal may be demanded on account of the disfigurement. Small pigmented naevi may be destroyed by electrolysis or by diathermy. Painting with trichloracetic acid removes pigmentation and may flatten the mole. The hairs can be removed by electrolysis and after their removal there is often some diminution of the pigment. It is thought by some authorities that treatment with electrolysis or irradiation increases the risk of malignant change but we agree with MacKee that no evidence has been produced to support this view.



Fig 19. Later stage of Fig 18

Moles may be excised and if the area is of considerable size plastic surgery will give the best cosmetic result.

Solid carbon dioxide is also of service in the treatment of extensive pigmented mole being pressed firmly on the area for forty seconds. A moderately severe reaction with the formation of *bullae results, the hair comes out and the pigmentation fades.* Several sittings may be necessary. Thorium X is also of value in the treatment of pale moles (see p 770). In very dark moles it is impossible



Fig 20. Naevus verrucosus

PLATE –



AN EXTENSIVE VASCULAR NAEVUS WITH MANY ERECTILE TUMOURS

The mucous membrane of the lips and tongue were also involved

to remove all the colour and they should be excised or left alone

In the adult any pigmented mole which is increasing in size should be removed without delay and if the biopsy suggests malignancy an extensive resection of lymphatic channels and glands should be undertaken



FIG 21 Nævo lipoma

Nævus verrucosus is the name given to a pigmented mole with hyperkeratosis (Fig 20)

Nævus lipomatodes is a pigmented mole with hypertrophy of the connective tissue and fat (Fig 21)

Milium congenitale is a rare congenital condition Dr Radcliffe Crocker described two cases

The lesion is a pale reddish yellow plaque on the head or face The surface is finely granular and composed of closely aggregated pale yellow papules the size of a pin s point Comedones are present at the borders and scales on the surface Patches on the scalp are hairless These nævoid structures consist of nucleated epithelial cells in the corium enclosed in a kind of capsule

The treatment of these nævi if limited is on the same lines as for the common pigmented mole

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CONGENITAL ANOMALIES OF THE CUTANEOUS VESSELS

Nævus anæmicus This name is given to a condition in which there are one or more scattered patches of skin which are paler than the normal integument These may be caused by an impaired development of the cutaneous vessels or of their nerve supply The flare reaction of Lewis is smaller in the anæmic areas than in the normal skin and disappears very slowly

This phenomenon led to experiments by F O Fiorkowski who produced in a normal skin the characters and reactions of nævus anæmicus by the ionto phoresis of 1 in 1 000 solution of epinephrin hydrochloride He concludes that this congenital anomaly is a fault of innervation (1944) *Archiv of Derm Chicago* 50 374 Bibliography Parkes Weber described a group of case in which the anæmic nævus was associated with extensive telangiectatic nævi meningeal hæmangioma buphthalmos and nervous phenomena suggesting a relationship with von Recklinghausen s disease (1932) *Brit J Derm and Syph* 44 7

Nævus vascularis

The vessels of the skin and the subcutaneous tissue may be congenitally hypertrophied forming the local or diffuse vascular overgrowths called

nævi vasculares. They are the commonest congenital affections of the skin, and it has been estimated that one person in ten has a vascular nævus of some sort. When the term "nævus" is used without a descriptive adjective this form of congenital anomaly is usually implied.

Vascular nævi may be classified according to the parts involved as cutaneous, subcutaneous and mixed. They may be subdivided into the following groups:—

(1) Capillary hæmangioma.
- (a) Simple superficial type } Angioma simplex.
- (b) Port wine mark (nævus flammeus) } Angioma simplex.
- (c) Stellate type (nævus araneus).

(2) Cavernous hæmangioma.
- (a) Superficial "strawberry mark." Cutaneous nævus.
- (b) Deep or subcutaneous.

(3) Mixed type. Capillary cavernous hæmangioma.

Etiology. The plane angioma (nævus flammeus) and angioma cavernosum are congenital anomalies, though they may escape notice until



Fig. — Nævus flammeus

some time after birth. The spider or stellate nævus does not usually appear until some years after birth and sometimes follows an injury. It should perhaps be considered as a form of telangiectasis, but for convenience is dealt with here.

Pathology. "*Nævus flammeus*," *the plane angioma* or port wine mark, is a capillary hyperplasia. The vessels are dilated but there are no lateral communications between them. Though it is a capillary telangiectasis, it often extends through the whole depth of the skin. The *cavernous nævus* is a hypertrophy and dilatation of the capillaries of the corium or of the subcutaneous tissue, or of both, with communications between the dilated

vessels forming cavernous spaces The subcutaneous nævus may be enclosed in a fibrous envelope or it may be diffuse Combinations of subcutaneous tissue and fat overgrowth with the vascular hyperplasia occur Congenital vascular nævi are often associated with other congenital affections such as adenoma sebaceum pigmented moles fibromata etc The *nævus araneus* (Lat *aranea* spider) consists of a central arteriole with radiating large capillaries extending from it

Clinical Features —

Angioma Simplex The lesions are macules of a pale pink colour or bright red purple or violet (*nævus flammeus* port wine mark) They are usually of considerable size and may affect large tracts of skin They are often unilateral involving perhaps one half of the face and neck or forming extensive bands along a limb or on the trunk Occasionally lesions of small size occur in the neighbourhood of an extensive patch The macules are of varying shape and the surface may be perfectly smooth or there may be small erectile tumours on a flat area (Plate 2) The colour varies from time to time effort crying coughing and exposure to cold tending to deepen the tint Pressure causes a temporary disappearance or diminution of the colour In some cases the vascular dilatation occurs in the mucous membranes as well as on the skin The face and neck are the parts most affected and the condition causes great disfigurement A slight nævoid condition of the median part of the forehead and nape is common the latter is sometimes called *erythema nuchæ*

Cutaneous nævus The common strawberry mark is generally smaller than the port wine stain It varies from a pin s head to an inch or so in diameter It is elevated above the surface of the surrounding skin and is of a bright red colour Compression causes partial or complete disappearance of the colour and swelling Effort crying coughing and the like tend to cause erection or turgescence of the tumours This type of nævus may occur anywhere on the skin and occasionally on the mucous membranes

Subcutaneous nævus The skin over the swelling is of normal colour or bluish but compression causes the nævus to diminish in size though it rarely completely disappears Sometimes it has the distensible character of the common cutaneous variety

Mixed nævi are more common than the purely subcutaneous The swelling is in part red but the affection of the vessels of the skin is rarely so extensive as that of the subcutaneous tissue Large mixed nævi are sometimes met with at the muco cutaneous junctions of the mouth and of the external genitals

Fibro angioma (Gk *aggeion* vessel) In rare instances a vascular nævus of large size may be associated with a hyperplasia of fibrous tissue

Course Vascular nævi may (1) disappear spontaneously (2) remain stationary or simply increase with the growth of the child or (3) grow rapidly Authors often lay stress upon the frequency of spontaneous disappearance and supporting this view is the fact that the pink varieties and the subcutaneous nævi are extremely rare in adults yet common in children and surely some must escape treatment (*vide* W A LISTER 1938 *Lancet* i 1429) The deeper port wine marks and vascular nodules certainly persist often unfortunately in spite of treatment

Injury or friction may cause ulceration of the nævus, especially if it is situated on the genitals in the groins or on mucous surfaces. The ulceration may involve the whole or part of the angioma and as a rule cures it by the *formation of a scar*. *Healing in such cases is slow.*

Familial telangiectasia (Gk *tele* far *aggeion* vessel) is characterised by recurring epistaxis and multiple telangiectases of the skin and mucous membranes. Osler has specially drawn attention to this group and the clinical features are thus summarised in a paper of Parkes Weber. The disease affects and is transmitted by both sexes. The hæmorrhage is in most cases only from the mucous membrane of the nose and the epistaxis usually precedes the cutaneous manifestations by many years. The telangiectases first attract attention towards middle life and the tendency to hæmorrhages *and to the formation of angiomata increases with age.* Grave anæmia may result. There is no tendency to hæmophilia, and no alteration in the coagulability of the blood. The telangiectases affect the face, lips, ears, and buccal and nasal cavity chiefly but the trunk and extremities may be involved and rectal hæmorrhages and menorrhagia have been recorded. Colcott Fox's case was characterised by bilateral telangiectases on the trunk with a marked history of epistaxis in childhood *and recent rectal hæmorrhage. There was no family affection.* In a woman under our care the telangiectases began at the age of forty one. Her brother and one sister and her paternal aunt suffered from epistaxis which in two cases had necessitated plugging of the posterior nares.

Hutchinson's "Infective Angioma" Angioma Serpiginosum. A peculiar form of vascular nævus characterised by red patches some of which have a purplish tint round which are clusters of minute red spots—the "cayenne pepper grains" of Hutchinson. *In a girl of twenty under* Sequeira's care it was stated that a few scattered red spots were noticed *when the patient was two years old.* The nævus had gradually spread by the formation of minute red spots until it reached from the right shoulder and part of the neck and chest down the arm and forearm as far as the dorsal surface of the forefinger and thumb. This form of angioma differs from those previously described in its slow extension.

Nævus araneus. Stellate nævus. Spider nævus.

This common variety demands special notice. The lesions consist of small bright red spots varying in size from a pin's head to a millet seed, and from this as a centre thread like dilated capillaries radiate. Occasionally the central spot is erectile. Although it may be visible at or soon after birth the stellate nævus sometimes does not appear until the second decade of life or even later. It is possible that all are derived from small congenital lesions but their sudden appearance may *be related to trauma* or toxæmia. In any case most of these nævi do not attract attention till the child is in its teens. They are commonly multiple and usually on the face.

Diagnosis. Sometimes an early lupus vulgaris is mistaken for a vascular nævus. The colour of the jelly like nodules and *the date of their* appearance should prevent this error. An ulcerated nævus is likely to give rise to *real difficulty.* *The history* that there has been some abnormality noticed at birth or soon after and that recently this has taken on an ulcerative character will be a guide. Moreover the ulceration is

often incomplete and some portion of the lesion will show the true nævoid character but fungating malignant disease may be simulated

Prognosis Nævi may disappear spontaneously particularly the superficial variety which affects the forehead and nape of the neck and most of the cavernous nævi Others remain stationary and some increase rapidly

Treatment Nævi require treatment when they are increasing in size when they cause disfigurement and when they are ulcerated Remembering that they may disappear spontaneously many advise waiting in all cases where the nævus is not obviously growing to allow time for this spontaneous involution While waiting it is a good plan to paint the nævus daily with non flexile collodion which exerts a steady pressure on the vessels and occasionally appears to effect a cure

Unless rapidly increasing there is rarely any necessity for treating a nævus on covered parts of the body On exposed parts and especially on the face and neck it is of the utmost importance to effect the removal with the least possible disfigurement

Both physiotherapy and occasionally surgery are employed in the treatment of vascular nævi The method chosen will depend upon the site of the angioma its size whether it is capillary or cavernous and whether it involves the subcutaneous tissue as well as the skin Many measures have been used but we shall present here those that we have found of service

Treatment of Nævus araneus (Spider nævus) *By electrolysis* A current of 1 to 2 milliamperes is employed The sterile irido platinum needle attached to the negative pole is inserted into the body of the nævus while a pad moistened with saline solution is placed upon some indifferent part On the passage of the current the body of the angioma and its limbs become pale and then the needle is withdrawn As a rule no anæsthetic is required except when the site is an eyelid The scar is *imperceptible* (see p 757)

By cautery The centre of the nævus is touched *momentarily with the* point of a Paquelin or galvano cautery at a *dull red heat* A minute depressed scar is left

By diathermy A fine point is used similarly

Treatment of capillary nævi Small capillary nævi may be treated satisfactorily by the carbon dioxide pencil It is wise to make a pencil with parallel sides a little larger *than the area* to be treated and to pare it down to fit exactly The pencil is then *pressed firmly* upon the part for from twenty to forty seconds according to the *effect desired* On the removal of the pencil a depressed white cavity *with frozen* edges is seen In about five minutes the cavity fills up and becomes a deeper red The actual application may be attended with *little pain but* the thawing process is sometimes very painful In six hours or less there is a strong inflammatory reaction with the formation of blisters These are allowed to heal under some simple soothing antiseptic dressing Provided there is no encroachment on the surrounding skin and sepsis is avoided a supple scar results The melting point of the CO_2 snow is -79 C (see p 756)

Larger nævi can be treated by adding powdered CO_2 to acetone or alcohol to make a slush which is swiftly applied to the surface with a brush Freezing is immediate and the effect can be *increased* by rapidly reapplying the slush to keep the part frozen If the results are inappreciable and the

child stands pain badly Thorium X solution should be used as described for the treatment of nævus flammeus (*infra*)

Treatment of cavernous nævi As already mentioned many of these disappear spontaneously for they are rare in adults It is therefore rarely necessary to treat them unless they are growing, or for cosmetic reasons Such nævi on the trunk, etc may be left alone Cavernous nævi of the scalp should not be treated unless they are conspicuous as any measure employed may cause baldness Careful irradiation is probably the most satisfactory treatment

Gamma rays In our experience the best treatment is by gamma radiations from screened radium needles, plaques or the radium "bomb provided the dose is well under that which might cause atrophy of the skin X rays may also be used The exact dosage should be left to an experienced radio therapist

Radium needles or *radon seeds* may be imbedded in cavernous nævi and if the operation be skilfully performed there is little risk of damaging the overlying epidermis

Injections *Multiple injections of 1 minim of tr iodi mitis or of acid* hydrochloric dilut into the body of the cavernous nævus cause focal inflammation and thrombosis with subsequent shrinking and good results may be obtained

Electrolysis Excellent cosmetic results may be obtained in many cavernous nævi by bipolar electrolysis A current of from 5 to 10 milliamperes is used Both poles are connected with irido platinum needles and they are inserted into the nævus Bubbles of gas are evolved N B On no account should a *steel* needle be used at the positive pole because iron will be deposited in fact tattooing will take place When the nævus is of considerable size several punctures may be necessary or the multipolar apparatus of Lewis Jones may be employed After the operation the area is covered with sterile gauze fastened with collodion For the electrolysis of these nævi an anæsthetic is required especially if they are near the eye CO_2 snow should *not* be used on a deep cavernous nævus since it can only produce an elevated prominent scar over the deep unaffected portion

Treatment of nævus flammeus *The deep purple type* is usually resistant to all forms of therapy We have tried CO_2 snow electrolysis intradermal injections multiple puncture with the cautery beta and gamma rays with radium and radon blister reactions with the Kromayer lamp and thorium X without good effect The majority of these birth marks are extensive and highly disfiguring Where treatment has proved unavailing Cover mark (Lydia O Leary New York) may be used to hide them

Thorium X The paler varieties especially when patchy can be much improved by painting with thorium X in a varnish or in *alcoholic solution* We prefer the latter and advise a solution containing 2 000 e s units of thorium X per c c The affected skin is cleansed with ether and the solution is painted on with a camel hair brush As it dries a second and third coat may be applied and the surface blown upon to hasten drying A stronger reaction is obtained if an occlusive film of collodion is then applied The area should not be washed for at least four days and preferably for a week to obtain the maximum effect An erythematous

reaction appears in a few days and some desquamation later Superficial vesication may be caused by several paintings The reaction subsides in three to four weeks and the application should then be repeated After twelve to eighteen treatments pale areas should be conspicuous and the treatment may be suspended to observe if the improvement is progressive

Gren ray therapy has given good results in some cases A dose of 700 r is a safe initial dose and if the skin does not become sore this may be doubled and repeated after two weeks The interval of two to four weeks is adjusted according to the reaction and the dose given The surrounding skin must be protected by adhesive strapping or a bismuth paste Severe reactions may lead to subsequent telangiectases

None of the above methods can be deemed satisfactory but considerable improvement may be effected In every case a guarded prognosis should be given (see Appendix III)

Erythema nuchæ The usually pale pink birth mark so common at the nape of the neck and extending up into the hair rarely demands treatment Many disappear in time and others can be hidden by the hair

Angio keratoma A rare condition characterised by minute telangiectases with warty growths upon the extremities

The patients are usually females and all suffer from chilblains The late Dr Pringle showed four cases in one family and similar instances of familial affection are on record Some have suggested that the affection is a tuberculide but of this there is no direct evidence

Histologically the lesions consist of dilatations of the capillary blood vessels The stratum corneum is thickened and there is inflammatory thickening of the papillary layer The horny thickening is secondary to the vascular dilatation

The disease begins in childhood or adolescence in persons of poor physique In most instances the telangiectases first appear as a sequel to chilblains

The lesions are pin head sized vascular growths on the backs of the fingers and toes sometimes on the limbs rarely on the ears The vascular growths become warty and by coalescence small horny vascular patches may form The larger tumours bleed easily

The lesions can be removed by electrolysis The general health usually requires attention

CONGENITAL AFFECTIONS OF THE LYMPHATIC VESSELS

Lymphangioma circumscriptum is a rare condition of overgrowth of lymphatic vessels and spaces in the skin It may co exist with a common vascular nævus The lesions are multiple closely set transparent vesicles with thick walls The tumours appear in infancy or early childhood and the chest and upper limbs are the parts most commonly affected There are no symptoms and there is no tendency to spontaneous involution as in some of the congenital angiomata

A rare form of diffuse lymphangioma causing elephantiasis is described at p 130

Treatment If causing trouble from their position lymphangiomata may be removed by excision or destroyed by electrolysis carbon dioxide snow diathermy or radium

child stands pain badly. Thorium X solution should be used as described for the treatment of nævus flammeus (*infra*).

Treatment of cavernous nævi. As already mentioned, many of these disappear spontaneously, for they are rare in adults. It is therefore rarely necessary to treat them unless they are growing or for cosmetic reasons. Such nævi on the trunk, etc., may be left alone. Cavernous nævi of the scalp should not be treated unless they are conspicuous, as any measure employed may cause baldness. Careful irradiation is probably the most satisfactory treatment.

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Treatment of nævus flammeus. The deep purple type is usually resistant to all forms of therapy. We have tried CO_2 snow, electrolysis, intradermal injections, multiple puncture with the cautery, beta and gamma rays with radium and radon, blister reactions with the Kromayer lamp and thorium X without good effect. The majority of these birthmarks are extensive and highly disfiguring. Where treatment has proved unavailing "Covermark" (Lydia O'Leary, New York) may be used to hide them.

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Ectodermal Dystrophies

This title includes a number of developmental abnormalities affecting the skin its appendages and often the teeth in many cases the defects are hereditary or familial and behave as recessive or dominant characteristics



Fig 23 Congenital alopecia with congenital dystrophy of nails Boy æt 4

Males are usually affected Cockayne has attempted to classify the various types and cases have been reported showing many or all of the following defects —

(1) Constitutional The individuals are delicate and undersized

(2) Skin This is smooth and dry as a result of complete absence

Trophœdema (Milroy's Disease, Meige's Disease)

(Gk. *trophes*, nourishment; *oideo*, swell)

A rare variety of elephantiasis of probably nervous origin characterised by chronic œdema which passes on to induration.

The condition is most commonly congenital and may be familial. It is more frequent in females than in males. Occasionally the onset is about puberty and may be later in life. Milroy found a family in which 22 members were affected and Meige one in which there were eight. In 1909 Professor Bulloch collected 75 published familial cases.

Clinical features. The lower limbs to the ankles or knees are the parts most frequently affected, but the thighs, upper extremities and the face are occasionally involved. The onset may be attended with neuralgic pains, but there are no symptoms of inflammation. Sometimes there is exaggeration of the tendon reflexes. The parts are swollen and œdematous, but the skin is smooth and retains its natural colour. There are, however, deep adhesions which prevent the integument being pinched up. In most cases the affected areas gradually become indurated and fibrous; in others the lesions are hard when first observed. The disease is unattended with any symptoms and remains stationary for years. It only causes trouble by the impairment of movement. Spontaneous resolution may occur, but once developed, the condition is usually permanent.

It is interesting to note that somewhat similar conditions have been observed in association with anterior polio-myelitis and lesions of the spinal cord, and one theory of its etiology ascribes the condition to a congenital disorder of trophic centres in the cord. Imperfect continuity of lymphatic channels through defective development is also a possible cause.

Regular massage of the parts is advocated and the limbs should be supported by elastic bandages.

CONGENITAL AFFECTIONS OF THE APPENDAGES OF THE SKIN

Congenital Affections of the Hair

In the albino the hair is fine and devoid of pigment (vide p. 45).

Congenital alopecia may be universal or partial. Complete absence of the hair is very rare. Sequeira had four cases, two in one family. The scalp and eyebrows are completely bald, and the eyelashes few in number and non-pigmented. The baldness may persist, but in some instances there is merely delayed growth, and after several years the hair begins to appear as fine down, and later it becomes normal or nearly normal. Congenital alopecia may be associated with dystrophy of the nails (Fig. 23), and these cases, with those of permanent alopecia, are probably examples of ectodermal defect, next to be described.

Partial congenital alopecia is less rare. Tracts of the scalp of varying size and shape are devoid of hair and may remain so. They may be classed as a variety of nævus.

In certain families the development of hair is deficient throughout life.

No treatment, either external or internal, appears to have any influence upon congenital alopecia.

PLATE 3



ADENOMA SEBACEUM

(Pringle type)

[To face p 6

vascular hypertrophy, and in the third (Hallopeau) there is hyperkeratosis

Clinical features The tumours are small yellowish or red papules, bright in colour, shiny and dome shaped, rarely warty affecting the middle



Fig 25 Adenoma sebaceum (Pringle type) Microphotograph of section

third of the face, and especially the naso labial furrows (Plate 3) They increase slowly until puberty is reached when they become stationary



Fig 26 Adenoma sebaceum (polypi and dystrophy of nails)

Small cutaneous horns may develop on the surface The following anomalies are often associated with sebaceous adenoma —

Vascular naevi pigmented naevi and cutaneous polypi

A peculiar form of flat fibroma especially above each iliac crest

Cutaneous polypi rising from the sides of the finger nails (Fig 26)

Tuberose sclerosis, in which hard dense gliomatous tumours develop

upon the surface of the cortex of the brain Small gliomata may be numerous under the ependyma of the ventricles and nævoid tumours may be present in the meninges These lesions account for epileptic or Jacksonian fits and occasionally paralysis or paresis

Cardiac and renal tumours are often associated and may cause death before puberty

Treatment Sebaceous adenomata may be removed by the knife or destroyed by the galvano cautery or electrolysis When they are numerous and closely set carbon dioxide snow may be used The results of treatment are usually disappointing

Hidradenoma Syringoma Syringocystoma

Congenital tumours of the sweat glands occur —

(1) As single papillary or flat tumours which may or may not have



FIG Hidradénomes éruptifs Tumours in intermammary and epigastric regions Female æt 23

been noticed in childhood In some of these tumours there are degenerate changes in the connective tissue of mucoid or hyaline character

(2) An eruptive form Hidradénomes éruptifs (Jacquet and Darier) (Gk *hudor* water) A rare affection generally *occurring* in women and appearing as an eruption of pin head to millet or split pea sized skin coloured or pink solid lesions in the skin and slightly raised above the surface The condition may occur *on the face* neck and chest and epigastrium under the breasts and the sides of the chest





Fig 9 Epithelioma a lenoi les cysticum (kin lly lent by Dr L S ivatard)



Fig 30 Epithel oma a lenoides cysticum (kindly lent by Dr I Savatard)

On the face the normal structure of syringadenomata may be found The histology of lesions on the trunk varies and may show small epithelial strands suggestive of vestigial glands or may show small epidermic cysts associated with some hypertrophy of the overlying epidermis

The eruption commonly appears at puberty and is said sometimes to disappear later

Fig 27 illustrates the distribution in a girl of twenty three At the age of twenty a number of small growths were noticed on the chest and later on the back They were confined to the intermammary triangle and epigastrium the sides of the chest and the scapular regions The tumours were pale yellow or nearly the colour of the skin tense and hard to the touch There were no subjective symptoms

Hidradenomes eruptifs are generally believed to arise from the sweat ducts They are probably derived from congenital anomalies,



Fig 28 Hidradénome éruptif Microphotograph of section

which become stimulated to growth for some unknown reason The lesions do not become malignant Spontaneous involution is rare

Treatment Benign tumours of the appendages of the skin may be excised or *if small treated by electrolysis or the cautery*

Syringocystoma has been successfully treated by X rays

Epithelioma Adenoides Cysticum (Brooke)

This is a remarkable congenital and familial affection of the hair follicles

The tumours appear in childhood, and there is usually a history of heredity The growths are at first the colour of the normal skin or perhaps a little darker They vary in size from a pin s head to a pea but may be as large as a walnut on the scalp As they grow they often become translucent and may acquire a bluish tint In advanced cases minute



Fig 29 Epithelioma adenoides cysticum (kindly lent by Dr L Savatard)

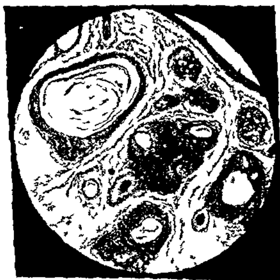


Fig 30 Epithelioma adenoides cysticum (kindly lent by Dr L Savatard)

vessels may be seen on the surface On the face there are often many small milium like white spots and minute pigment spots The tumours are firm on palpation and move with the skin The seats of election are the central third of the face the root of the nose, the nostrils and adjacent parts of the cheeks, upper lip and chin (Fig 29) but the whole face and the scalp, neck, and upper extremities may be involved Dr Savatard believes that single tumours are often mistaken for common moles Ulceration of the growths is unknown, but occasionally they become malignant The lesions consist of branching down growths of epithelial cells, in the centre of which there may be cystic formation around a *lanugo hair* (Fig 30) "*Cell nests*" are a striking feature of the sections

Diagnosis may call for a biopsy The lesions may be confused with adenoma sebaceum syringocystoma or leiomyoma cutis

X ray treatment is recommended by Savatard Solitary lesions are best excised

Milium, the minute pin head sized tumour, found frequently multiple on the forehead in adults is described at p 670 *Tricho epithelioma* which is believed to be congenital, is figured at p 669 Dermoid cysts (p 670) and congenital sinuses (p 75)

Neuro-fibromatosis von Recklinghausen's Disease, Molluscum fibrosum

(*Lat molluscus from mollis soft*)

This rare condition is characterised by the formation of multiple fibrous tumours in the skin tumours on the nerve trunks and pigmentation

Etiology The cause is unknown The condition is often associated with pigmented and other nævi In about 20 per cent of cases several members of a family are affected and the hereditary tendency is marked

Pathology The tumours consist of fibrous tissue of an embryonic type covered by normal or slightly thinned epidermis In some there are gelatinous masses and mast cells Primitive nerve fibres and ganglion cells are also found in them Similar lesions may be widely spread in other organs

Clinical features The disease may be first noticed in infancy, but attention is usually called to it by the development of the tumours about puberty The whole surface of the body is studded with soft roundish tumours, embedded in the skin or sessile or pedunculated They may be the colour of the surrounding skin or bluish or brown and in later stages often become irregular They may be of all sizes and in later life sometimes attain enormous proportions Tumours weighing as much as thirty five pounds have been met with It is often easy to herniate the tumours under the surrounding skin when they are of small dimensions

The pigment is in the form of freckles or large patches with colour shades from yellow to dark brown and the pigmented lesions may be scattered between the tumours or precede the tumours or more rarely be the sole cutaneous manifestations of the disease The patients are often but not always, of low mental development

Affections of the Nerves There may be a hypertrophic neuritis or a variable number of discrete, firm spindle shaped or fusiform neuro

fibromatous tumours along the course of nerves Such lesions are tender The condition may be associated with opaque nerve fibres in the retina

The tumours gradually enlarge but are of no danger to life They often entail serious discomfort from their position and dimensions

Large pendulous tumours are called fibroma pendulum

Dermatolysis is a variety of fibroma pendulum Crocker described a remarkable case in which after an accident attended with paraplegia the buttocks and legs began to enlarge Enormous pendulous folds of skin and subcutaneous tissue overlapping like flounces hung from the



Fig 31 Neuro fibromata

lower part of the chest half way down the thighs and down the leg below the knee Small fibromata developed from time to time on the abdominal wall There were no symptoms

Treatment Where their presence causes trouble from friction or pressure or where the mass of the tumour is an impediment to movement excision is the best treatment In the patient figured the small tumours on the eyelids obstructed vision and many were removed at different times We have had no success with surface or interstitial applications of radium

Ehlers Danlos syndrome (Cutis hyper elastica) Here one should distinguish the fibromatous type of dermatolysis from the diffuse type (elastic skin cutis hyperelastica) which is quite unrelated In this condi

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infiltration in the skin, are white, grey, or pale brown. Angioid streaks have been noted in the retina.

Microscopically, the appearances suggest a curious infiltration of the dermis in which swollen and fragmented elastic fibres are surrounded by hyaline material, probably resulting from degeneration of the collagen.



FIG. 35.—Pseudo-xanthoma elasticum. Showing thickening of abdominal wall and groins.

Small granular deposits of calcium may be present but the calcium content of the blood is normal and the true significance of the histological findings is not understood but suggests a systemic degeneration of the elastica.

There are usually no symptoms and the condition may remain unchanged for many years without appreciable effect upon the patient's general health.

Neuroma

These are exceedingly rare tumours arising from the neurilemma. They are chronic, painful, flat tumours imbedded in the skin of small size not exceeding a small pea or nut. Pain radiates from the growth when it is handled and sometimes there are paroxysmal attacks. Removal of a portion of the nerve supplying the affected area has been found to relieve the symptoms.



FIG 36 Neuroma Nerve fibres gold stain

Plexiform neuroma may be associated with congenital hypertrophy of a limb or digits

Glomus tumour

The glomus tumour (Masson) is a small encapsulated growth whose origin is mainly the modified unstriped muscle cells of the neuro myo arterial junction which constitutes the normal glomus (*vide* p 7) If superficial



FIG 37



FIG 38

Glomus Tumours (Kendall and Thomson)

the tumour appears as a blue purplish or reddish spot or soft papule if deep it may be invisible It is most common on the hand and the most suggestive features in diagnosis are the severity and paroxysmal character of the pain readily provoked and out of all proportion to the size of the lesion

The tumours appear commonly in the nail bed or pulp of the finger or

Xeroderma pigmentosa agrees in all respects with a simple recessive character due to a single gene. The irritation of the actinic rays of light is the exciting factor, as in cases of porphyrinuria congenita, thus suggesting that a metabolic error is the underlying cause. However no sensitising substance corresponding to hæmatoporphyrin has been demonstrated, although Usuba claims to have made normal skin light sensitive by injecting serum from a patient with xeroderma pigmentosa. The condition closely resembles the chronic dermatitis which occurs in X-ray workers and as a sequel to excessive treatment (*vide* p. 315).

All the lesions characteristic of xeroderma pigmentosa are found in the skin of the aged, in which also there is great liability for pigmented warts to become malignant.

Pathology. Kaposi, who first described xeroderma pigmentosa, believed that the first parts to be affected were the papillary body and the epidermis. Atrophy of the papillary layer is always present and the rete is thinned in the white patches of the skin. In the pigmented spots granules of pigment are found in the epidermal cells and also in the corium. The warty nodules consist of masses of stratified epidermis which send down processes into the true skin. *The malignant growths are squamous-celled epitheliomata*, and in sections of one of our cases numerous cell nests of the usual type were found in the many tumours removed. Melanotic carcinomata have also been observed.

Clinical features. Photophobia is the earliest symptom, and redness of the conjunctiva with erythema of the skin exposed to sunlight occur next, sometimes within a few weeks or months after birth. In severe cases the first exposure to sunlight results in an acute eczematous dermatitis of the face and hands, so that for a few summers the condition is mistaken for acute facial eczema until the unusual degree of freckling draws attention to the true diagnosis. The freckles are yellowish brown in colour, but unlike the common ephelides do not disappear with the approach of winter. As time goes on they increase in number, and then minute permanently dilated capillaries—telangiectases—are noticed. The next feature is the formation of a number of small dry warty papules and nodules. The nodules usually fall off after a time, leaving small atrophic patches, which ultimately become white. The scarring about the lids leads to ectropion and its attendant troubles. From time to time, however, the warty nodules, instead of dropping off, begin to grow rapidly, producing in a few days or weeks large tumours, which are true carcinomata. The little girl figured (Plate 4) had been under Sequeira's care for seven years, and during that time about twenty growths of this type had been removed. She was seen once a month, and the tumours were removed before the glands were involved. She was, however, removed from observation for some months, and when last seen was obviously near death from extensive malignant disease. Occasionally, as in the case just mentioned, there is a xerodermatous condition of the scalp and covered parts. The activity of the process varies from time to time, and is always increased in the summer months.

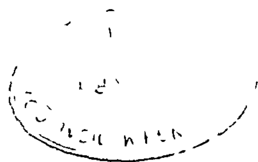
We have seen one case in which the disease, apparently of the same type, developed in a young man constantly exposed to wind, weather and excessive sun in the fields. Similar cases have been recorded.

PLATE 4



XERODERMA PIGMENTOSA

Girl aged ten affected from early infancy. Multiple freckles, pigmented warts, telangiectases, atrophic spots and an epithelioma at the left inner canthus. The ulcer at the left angle of the mouth was the site of another epithelioma. Many similar neoplasms have been removed. The backs of the hands were also affected.



Prognosis Nearly all the patients die early In some cases the malignant neoplasms produce metastases in the internal organs

Treatment is purely palliative The skin may be protected from the actinic rays of the sun by thick red veils or by the application of pigmented powders and salves (see treatment of erythema solare p 809) Early removal of the cancerous tumours is important Treatment of the warts and tumours by X rays and radium has been recommended but they often fail Cases occurring in tropical areas should be sent home at once

Congenital Sinuses

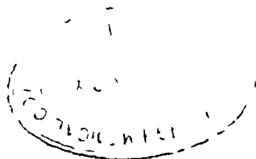
These anomalies occur as the result of incomplete fusion of fœtal segments or the persistence of embryonic ducts and clefts Examples are seen —

(1) In the midline of the neck (thyro glossal cysts)
(2) In front of the ear (pre auricular sinus)
(3) At the sides of the neck (branchial sinuses)
(4) In the natal cleft (pilo nidal sinus)
(5) On the nasal bridge



FIG 40 Abscess of pre auricular sinus

Cysts may arise or infection may occur at these sites giving rise to lesions simulating scrofuloderma Treatment is often unavailing unless the true origin of the lesion is recognised and the whole of the vestigial structure is excised This may be difficult and small persistent sinuses are not uncommon after radical surgery Sometimes healing results after irradiation with radium or X rays and zinc ionisation may be successful



adult requirements An international unit is equivalent to 0 33 microgrammes of crystalline vitamin A

Results of deficiency This form of avitaminosis causes atrophy of the epithelium of the mucous surfaces and the ducts of the secreting glands The atrophy is followed by free keratinisation which may obstruct the ducts At the same time the epidermis may become dry and the buccal mucosa



FIG 41 Avitaminosis Crazy pavement skin Deficiency of nicotinic acid



FIG 42 Avitaminosis Crazy pavement skin (Vitamins A and B partially complementary)

may be involved Later the eyes are affected the corneæ becoming keratinised (xerophthalmia) and this may proceed to the more serious condition known as keratomalacia

Phrynoderma (Gk *phryne* toad)

Phrynoderma was first related to hypovitaminosis among the poorly fed populations of China Southern India Ceylon and East and Central Africa There is good reason to believe that sub clinical deficiency of vitamin A is widely prevalent in many countries In the tropics the majority of the subjects of phrynoderma subsist chiefly on cereals Among Europeans there is deficiency of the lipochromes or carotenoids of fish liver oil milk egg yolk carrots and certain other vegetables No doubt factors other than vitamin A are also involved in this group

Clinical appearances The whole skin is dry There is an eruption

GROUP 2

DERMATOSES OF INTERNAL ORIGIN

Constitutional Endogenous etc

CHAPTER IV

CUTANEOUS AFFECTIONS IN GENERAL DISEASES INCLUDING VITAMIN DEFICIENCIES

VITAMINS AND THE NUTRITION OF THE SKIN

The nutrition of the skin and its appendages is profoundly influenced by deficiency of certain vitamins in the body Those of most importance *in dermatology are* —

Vitamin A Thiamin (vitamin B_1) Riboflavin Niacin (nicotinic acid) Pantothenic acid and probably other members of the B complex vitamins C, D and K

The general problems of avitaminosis the factors which predispose to it, the part played by storage in the body and the estimation of the degree of deficiency by laboratory tests are best studied in works on General Medicine or in monographs such as Bicknell and Prescott s ' The Vitamins in Medicine ' Here it will suffice to indicate the sources of the vitamins concerned the requirements of the healthy body with details of the cutaneous manifestations and the natural and artificial sources from which the deficiencies may be corrected Wherever possible we urge the employment of natural products rather than those of synthetic origin

The deficiencies may be due to —

(1) Partial or complete absence of one or more vitamins from the diet

(2) Diseases of the alimentary canal especially conditions attended *with diarrhœa e g ulcerative colitis or dysentery which prevent the* absorption and utilisation of the vitamins

(3) An inborn defect of metabolism which renders the individual incapable of assimilating foods containing the necessary factors Before we consider the different forms of hypovitaminosis it is important to realise (1) that deficiencies are seldom single and that in many cases there is deprivation of several vitamins and (2) that similar symptoms and even identical responses to therapeutic tests occur in several forms of avitaminosis

VITAMIN A

The *natural sources* of this vitamin are the oils from fish liver—cod and especially *halibut* milk and milk products—cream butter cheese yolk of egg kidney and liver *carrots and green vegetables Vitamin A is fat soluble* and fats are necessary for its absorption

Normal requirements The adult requires 4 000 to 6 000 international units daily infants and growing children need proportionately more—1 500 to 5 000 i u Pregnancy *and lactation demand an increase of 50 per cent* on the

associated with secondary infection is keratomalacia, characterized by dryness and ulceration

Treatment An adult requires 4 000 international units daily Children demand 50 to 100 per cent more The eruption and the associated phenomena usually clear up rapidly with the administration of cod or



FIG 44 Phrynoderma (Reproduced by permission of Dr Aykroyd)

halibut liver oil The latter has a high content of the *vitamin* Some commonly used proprietary preparations Radiostoleum or *Adexolin* (A) and (D) and Avoleum (A) supply the vitamin In West Africa and elsewhere red palm oil is used *The pure oil is unpalatable* but mixed with other vegetable oils in the proportion of 15 *per cent* *it is* usually acceptable

Other Follicular Keratoses and Xeroderma

Certain other follicular keratoses (p 706) and sometimes xeroderma (p 83) may be due in part to vitamin deficiency or to some inborn defect of metabolism for these dermatoses may *respond temporarily* to vitamin A therapy

Recent observations moreover show *that it least* two other diseases characterised by follicular keratosis may *ultimately* be included in this group of deficiency diseases viz Darier s disease (keratosis follicularis) and pityriasis rubra pilaris These *will now* be considered

Keratosis follicularis (Darier s disease) (page 712) has been attributed to vitamin deficiency but this has not *been established*.

Darier s disease is rare and its etiology remains obscure but evidence

of rounded dome shaped papules at the pilo sebaceous orifices Each papule is never more than 4 millimetres across They are closely set and produce a peculiar rough surface which Nicholls likened to toad skin (hence "Phrynoderma") The papules do not suppurate and leave no scars *The areas most affected* are the outer surfaces of the arms and the anterior and external aspects of the thighs The buttocks loins and back may be involved and after puberty the chin and adjacent parts may show papules The mouth and tongue are commonly sore (Figs 43 and 44)

Histologically the papules are found to be the wide open orifices of



Fig 43 Papular eruption in African (Phrynoderma) (Reproduced by permission from the late Dr J C Smith's Atlas of Skin Diseases in the Tropics)

the pilo sebaceous glands filled with a mass of horny material They thus resemble the *comedo* of *acne vulgaris*

Ocular phenomena Phrynoderma is accompanied by *night blindness* (hemeralopia) Both the visual purple and violet are developed from vitamin A Regeneration after bleaching by bright light *can only* be effected by a supply of the vitamin The rate of recovery has been taken as a measure of deficiency and a dark adaptation test has been used

Keratinisation of the corneal epithelium *xerophthalmia* (xerosis corneae) is seen in the more severe cases Localised dry foam like plaques on the corneae constitute ' *Bitot's* spots A further development possibly

stration of the vitamin B group in the form of parenteral injections of 3 to 5 c cm of liver extract daily

Other applications The neuralgia of zoster may be relieved by thiamin and very large doses have been found useful in lichen planus Thiamin is said to be a useful complement to actino therapy in the treatment of psoriasis

Two milligrammes daily are recommended for the relief of the pruritus of pregnancy and similar doses appear to be of value in the neurodermatoses

VITAMIN B_2 RIBOFLAVIN, LACTOFLAVIN

Natural sources Riboflavin is an important constituent of yeast One kilogramme of yeast yields 20 milligrammes of the vitamin The green leaves of vegetables milk liver kidney and fish roe are other sources

Normal requirements Adults need 2 to 3 milligrammes a day children from 1 to 2 milligrammes There is no international unit

Effects of deficiency Ariboflavinosis has been studied experimentally as well as clinically and some of its results are now well defined The angles of the mouth adjacent skin and mucous membranes are chiefly affected The syndrome is common in pellagra where it is associated with deficiency of nicotinic acid Ariboflavinosis is seen in the clinics in Great Britain but is especially common in some tropical countries where an ill balanced diet is the rule Aykroyd and Krishnan found many cases in children in mission hostels in Southern India where the inmates lived chiefly on parboiled rice Deficiency of this vitamin has been seen in the new born infant when the antenatal diet of the mother has been grossly defective

Angular Stomatitis (Perlèche)

It is probable that the subject of ariboflavinosis will have to be revised with further knowledge There is reason to believe that some of the discrepancies in reports may be due to the fact that other factors are essential for the proper utilisation of riboflavin

It should also be emphasised that cheilosis may be due to local causes



Fig 45 Angular Stomatitis Perlèche
Ariboflavinosis

indicates that deficiency of vitamin A is partly responsible Peck Chargin and Sobotka (1941) and Porter and Codding (1945) found tha *large doses of the vitamin and a dietary rich therein could effect a cure* According to Darier the disease occurs more frequently in males than in females but is so rare a disease that sex incidence is of little importance In twenty five years experience at the London Hospital Sequeira saw three female and no male cases Small family outbreaks have been reported and though this suggests infection it does not exclude hereditary *or acquired avitaminosis for Pohlmann recorded the transmission of the* disease through three generations

Pityriasis rubra pilaris (p 710) The disease is rare in this country At the London Hospital the patients were between the ages of twelve and thirty five, but instances of earlier and later development occur The sex incidence seems to vary in different countries Males predominate *on the Continent and females in London clinics*

Some evidence that deficiency of vitamin A is, at any rate a factor in the causation of the disease was obtained by Brunsting and Sheard who described a definite response to large doses of the vitamin and also reported changes in dark adaptation Other observers have not had such success in the treatment of pityriasis rubra pilaris but a therapeutic test should be made using large doses of vitamin A with adequate supplies of the natural substances containing the vitamin in the diet These include liver milk eggs butter and vegetables

VITAMIN B_1, THIAMIN, ANEURIN

Natural sources The chief sources of this vitamin are the pericarp and germ of cereals Their removal in the polishing of rice causes beri beri Other vegetable sources are nuts and legumes Thiamin is also present in yeast egg yolk liver and pork

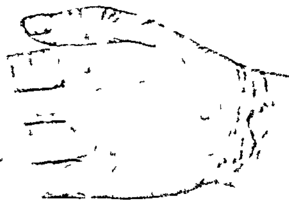
Normal requirements An adult requires 1 milligramme of the vitamin (320 international units) daily Two milligrammes are the optimal dose A pregnant or suckling woman needs twice as much infants and children 0 25 to 0 6 milligramme daily

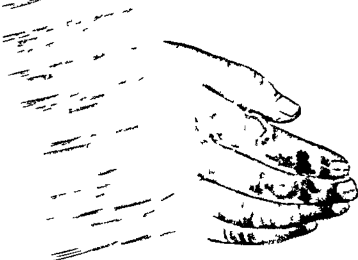
Thiamin is essential for carbohydrate digestion Deprivation causes impairment of the nutrition of nerve cells with the development of the classical symptoms of beri beri *i e* peripheral neuritis with hyperæsthesia anæsthesia cramps and weakness and in many cases œdema

Thiamin and the seborrhœides There is considerable evidence to show that thiamin deficiency plays an important part in the development of what are known as seborrhœic skin affections This appears to be due to its effect upon the oxidation of carbohydrates Three milligrammes of the vitamin given two or three times a day often prove of value in these dermatoses The seborrhœic eruptions associated with ariboflavinosis (p 82) and deficiency of nicotinic acid (p 84) may do better if thiamin is added to the other members of the vitamin B complex (*vide* p 202)

It has also been shown that there is a group of seborrhœides associated with gastric dysfunction which rapidly respond to the admini

PLATL 5





PELLAGRA

nd

posterior cornua and Clarke's column. Degeneration of the nerve fibres in the posterior roots and columns and in the peripheral nerves also occurs. The cells of the brain cortex are swollen and disintegrated, and there is an increase in the neuroglia.

Clinical features. The eruption occurs most commonly on the face, sometimes with a "butterfly" distribution across the nose, on the neck and the backs of the hands, i.e. because the skin is hypersensitive to light.

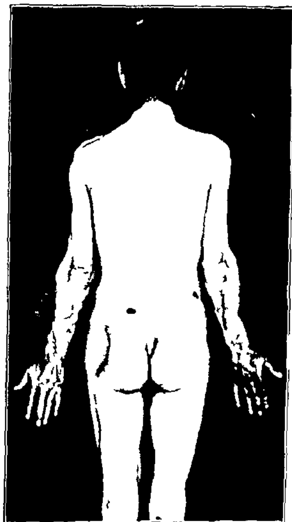


Fig. 17.—Pellagra. Gastro-intestinal and nervous symptoms. Melancholia.

Casal's collar is the name given to a V-shaped collar-like band not uncommon in pellagrins. It is 2 to 3 inches wide and at first has a red colour and then becomes pigmented and scaling.

Not only does exposure to light determine the areas affected, but pressure or friction may act similarly. Thus the elbows, knees, the ischial tuberosities and even a prominent seventh cervical vertebra may provoke the characteristic appearances. The affected areas are bright red or livid and swollen, and there are sensations of burning and itching. The erythema has a distinct line of demarcation (Plate 5). The eruption disappears in the winter but returns in the spring and lasts through the summer. In protracted cases the skin becomes thickened and pigmented and ultimately undergoes atrophy. There is often an associated nasal and facial seborrhoea.

The lips, tongue and mouth are inflamed and covered with small vesicles and ulcers. The parotid glands are often swollen and there is salivation. The bowels may be loose or constipated and abdominal pain is common.

There is progressive loss of strength, with attacks of vertigo and tremors. Melancholia, mental deterioration and insanity bring a number of patients into the asylums. Convulsions, tabetic symptoms, paralyses and optic neuritis and retinitis may occur.

Prognosis. Pellagra, if untreated, runs a chronic course and may end fatally in four or five years. Under modern treatment the outlook has

entirely changed and a cure may be expected if the disease is treated promptly and relapses are avoided by suitable diet

Treatment While attention to the general hygiene is of value the object of treatment is to supply the deficiency in nicotinic acid Five hundred milligrammes of the acid or nicotamide daily in divided doses of 50 milligrammes rapidly remove the major symptoms Should there be failure in one or more of these to respond it may be taken as certain that there is lack of one or more of the other elements of the vitamin B complex As all these factors are present in yeast it is obviously wise to prescribe this natural source in treatment The addition of half an ounce of yeast to the diet three or four times a day has an almost immediate effect upon the pellagrin Children should be given 2 to 4 grammes (half to one teaspoonful) thrice daily We indicated above that we are ignorant as yet of the part played by the stomach in pellagra and recently Sydenstricker and his colleagues have shown that the effect of nicotinic acid is greatly enhanced by giving patients gastric juice derived from healthy persons or from preparations from pig stomach

REFERENCES—BICKNELL and PRESCOTT *The Vitamins in Medicine* 1946 Heinemann H S STANNUS 1936 *Trop Dis Bulletin* 33 29 V P SYDENSTRICKER 1943 *Proc Roy Soc Med* 36 163 SEALE HARRIS Clinical Pellagra 1941 Good illustrations H S STANNUS 1945 *Brit Med Bull* 3 170

Acrodynia (Gk *akron* extremity *odune* pain)

This is a rare affection possibly allied to pellagra Some large epidemics have been recorded chiefly early in the last century in France Belgium and elsewhere It must not be confused with Erythrœdema which has sometimes been called Acrodynia by American writers

Symptoms The eruption started on the hands and feet and spread to the limbs and trunk It was erythematous and followed by desquamation and pigmentation Vomiting and diarrhœa suggested some poison taken as food Cutaneous hyperæsthesia followed by anæsthesia cramps and paresis were noted The disease was rarely fatal

So-called "Atypical Pellagra"

We include here for convenience certain dermatoses caused by vitamin deficiency mainly multiple but including deprivation of nicotinic acid We are aware that it may appear illogical to apply the term pellagra to them for the clinical manifestations vary with the combination of vitamin deficiencies For instance the clinical picture may be complicated by symptoms of beri beri or sprue In sprue the integument may resemble parchment and this condition is cured by nicotinic acid In rare instances a condition which has been called pseudo scleroderma may be produced by multiple avitaminosis and is curable by the exhibition of nicotinic acid with ascorbic acid In the condition known as Kwashiorkor (*vide infra*) the involvement of the hair suggests absence of other members of the vitamin B complex

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Keratosis of the Skin of the Legs

This is a common condition in native children in East Afric skin of the shins is most affected The integument looks as if it had pointed with black varnish or lacquer and that this had cracked (Fig It resembles the condition seen in young children described later (Kwashiorkor) The skin over the knuckles is thickened and wrink The subjects are on an inadequate diet and nicotinic acid will rapidly c up the keratosis

"Kwashiorkor" Infantile Pellagra Gillan's Œdema

This remarkable affection was first observed by Procter in 1926 amo weaned infants of the Kikuyu a vegetarian tribe in Kenya It has sin been described as Kwashiorkor by Dr Cicely Williams on the West Coa and by Gillan who was impressed with the concomitant œdema T most striking features are —

(1) Generalised pallor of the skin The dyschromia is so pronounce that on entering a ward it is quite easy to detect the affected children amon the other black infants The hypo pigmentation is a valuable diagnosti feature The skin is of a coffee or copper colour (Fig 48)

(2) The hair is affected There may be general thinning or even com

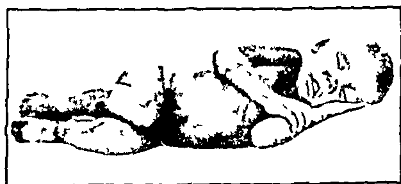


Fig 48 Kwashiorkor Infantile pellagra
(Reproduced by permission of Dr Trowell)

plete alopecia The hair is very fine and brittle and devoid of the natural tendency to curl It is pale grey or coffee colour When inspecting the scalp of one of these infants one is reminded of the grey haired elderly native

(3) There are jet black patches of hyperkeratosis varying in size from spots ⅛ inch across to large plaques involving extensive areas of the trunk and limbs The black patches are shiny and look as if they had been varnished and that the surface had cracked especially at the flexures They thus produce an appearance which has been aptly likened by Dr Cicely Williams to a crazy pavement (Figs 41 and 42)

(4) Pale areas are seen round the mouth and nose and the ' napkin area probably owing to discharges They vary in tint from white to pink or coffee colour They also occur in the flexures

PLATE C



PINK DISEASE. ERYTHROEDEMA

[To face p. 8

(5) Angular stomatitis is common Similar erosions are seen round the nostrils and the ocular canthi and the anal region The external genitals are raw particularly the scrotum

The nails are thin and often ridged longitudinally Sepsis is common Œdema is often present Most of the infants are brought to the clinic on account of swelling of the feet and legs When the œdema subsides extreme emaciation become evident Diarrhœa and the passage of large pasty motions are present in most cases

Nearly all the early cases seen proved fatal The recognition that the syndrome is due to vitamin deficiency has resulted in a large proportion of cures Many infants have been saved by the administration of a teaspoonful of marmite daily for each year of age Milk and eggs are added to the diet Yeast would be equally beneficial In the grave cases liver has been found a valuable addition to the above

T and J Gillman of Johannesburg finding by liver biopsy in the grave cases of kwashiorkor extensive fatty degeneration introduced treatment by hog s liver They found that 10 grammes daily of dried hog s liver with dilute hydrochloric acid were almost a specific and saved many infants (*Journ Amer Med Assocn* (1945) 29 12)

Trowell in Uganda has confirmed their observations

REFERENCES—L B CARRUTHERS 1941 *Trans Roy Soc Trop Med Hyg* 35 21 H S STANNUS 1936 *Trop Dis Bulletin* 33 29 H C TROWELL, 1942 *East Afr Med Journ* 18 302 (Literature) J H KODICEK and J YUDKIN 1942 *Lancet* 2 753 Slit lamp Microscope in Nutritional Surveys D FITZGERALD MOORE 1939 *Jour Trop Med Hyg* 42 109 Retro bulbar neuritis in Pellagra in Nigeria

Erythrœdema (Pink Disease) Infantile Acrodynia

A rather rare affection of debilitated infants characterised by redness and œdema of the extremities (Plate 6)

This condition was first described by Selter in 1903 but we owe the first full account to Swift in Australia where the disease is relatively common It has however, been known in the children s hospitals of this country for a long period Sequeira has seen one case in Kenya The disease occurs in children from the fourth month to the third year There is usually a history of previous febrile illness The infant is miserable and refuses to smile There is distaste for food and insomnia

The rash affects the hands feet cheeks and nose The parts are red and swollen and do not pit on pressure at first The appearance of the hands suggests a raw beef steak its colour fading at the wrists The erythematous skin peels later Free sweating is a common feature and then the extremities become sodden and there is great irritation The child has a mouse like odour it lies humped up turned on its face with the knees drawn up The face is rubbed from side to side on the bed and there is photophobia The muscles are in a state of hypotonus the mouth hangs open The teeth may drop out and there may be ulceration on the tongue The hair falls out leaving bald patches The knee jerks are diminished or absent and the sensation to pain is diminished

Tachycardia is a characteristic symptom the pulse being as frequent as 150 to 140 per minute for months

At the onset the age of the child makes dentition the common diagnosis but the more serious phenomena soon demand attention

The cause of erythroedema is somewhat doubtful It has been suggested that it is due to an infection but the symptoms and the response to treatment make vitamin deficiency more probable There is evident polyneuritis but there are no changes in the cerebro spinal fluid, and only slight leucocytosis in the blood

Treatment The child requires careful nursing The diet should contain all the vitamins Artificial light baths are recommended and judicious sun bathing has been found of value

The prognosis is good and complete recovery may be expected in three to six months

REFERENCES—SWIFT *Trans Tenth Australian Med Congress* Auckland 1914 p 547 R HUTCHISON 1931 *Lancet* 2 970 JEFFREYS WOOD and IAN *Brit Med Journ* 1935 2 527 531

VITAMIN C, ASCORBIC ACID

Natural sources The natural sources of vitamin C are fresh fruits and certain vegetables Black currants contain the highest proportion, and then come the citrus group oranges lemons, grape fruit Tomatoes rose hips potatoes and green vegetables also contain the vitamin In South Africa the guava is a valuable source and in the U S S R green walnuts are largely employed

Normal requirements An adult requires from 50 to 100 milligrammes of ascorbic acid daily Pregnant and suckling women need 150 to 300 milligrammes (1 milligramme is equivalent to 20 international units) Senile patients and those suffering from fever should have an increase on the normal adult dose Infants require 10 milligrammes a day

Two types of scurvy and various sub scurvy conditions require consideration

Scurvy, Scorbutus

It is calculated that in the adult deprivation of vitamin C will cause acute scurvy in from four to six weeks Experience in Africa confirms this estimate where natives who make long treks to get work in the mines not uncommonly arrive at their destination suffering from frank scorbutus Otherwise definite scurvy is now rare except in time of war and famine but sub scurvy states are far from uncommon in most European communities

The earliest signs of deficiency of vitamin C are identical with those occurring in vitamin A deprivation viz dry skin and follicular keratosis Scattered acne lesions appear on the *chest and back* *The characteristic* feature, however is hæmorrhage into the hair follicles and other evidences of *capillary fragility*

The vitamin is also believed to play a part in the formation of erythrocytes and deprivation is attended with anæmia Ascorbic acid is also credited with maintaining the resistance of the body to infection (*vide infra*)

There is also reason to believe that the adrenals require a certain amount of vitamin C and that where this is deficient pigmentation of the skin occurs, just as it does from adrenal dystrophy in *Addison's disease* Clinically it has been found that excessive pigmentation associated with chronic alimentary tract disease is diminished by the oral or parenteral administration of ascorbic acid

It is probable that in most cases of scurvy there is deficiency of vitamin P as well as of ascorbic acid

Clinical features of scurvy As already mentioned the earliest signs are dryness of the skin and the formation of papules at the pilo sebaceous orifices The characteristic feature however is hæmorrhage into the hair follicles Each hæmorrhagic point is centred by a hair The areas most commonly affected are the thighs and legs the buttocks and the backs of the calves being especially involved Large ecchymoses are often present on the outer sides of the ankles and in the popliteal spaces There is also bleeding into muscles and joints and under the periosteum The gums show characteristic signs Scurvy causes a stomato gingivitis The gums are turgid and swollen and bleed easily The dental papillæ are hypertrophied and the teeth may become loose These features are most marked about defective teeth and in the edentulous the gums are not affected Ulceration of the gingival mucosa is common and is attended with a very offensive odour Actual gangrene may supervene It should be noted that the gingivitis may precede the cutaneous manifestations

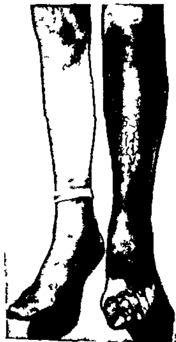


Fig 49 Scurvy Large ecchymoses Dr F Davis

The general symptoms of severe scurvy are emaciation anæmia fever and asthenia

A *pseudo scleroderma* apparently due to avitaminosis occurs rarely It yields to treatment by ascorbic acid and niacin

Treatment Scurvy responds rapidly to treatment by ascorbic acid This should be given in doses of 50 to 100 milligrammes a day Pregnant women and those suckling require 150 to 300 milligrammes The senile and patients suffering from a febrile illness demand an increase on the normal adult dosage Orange and lemon juice are important prophylactics and are valuable in treatment In some cases a better response is seen to natural than to synthesised products It is believed that this may be due to the fact that vitamin P deficiency occurs in scurvy as well as deficiency of ascorbic acid

Black currant juice is even richer in the vitamin than the citrus fruits as is the guava a native African fruit

A form of scurvy characterised by hæmorrhages into the muscles of the thighs and the popliteal spaces has been seen in East Africa The skin is unaffected

Infantile Scurvy Barlow s Disease

This form of scurvy occurs in babies from six months to two years old An infant deprived of vitamin C for six months becomes pale with puffi

The cause of erythrœdema is somewhat doubtful. It has been suggested that it is due to an infection but the symptoms and the response to treatment make vitamin deficiency more probable. There is evident polyneuritis but there are no changes in the cerebro spinal fluid and only slight leucocytosis in the blood.

Treatment. The child requires careful nursing. The diet should contain all the vitamins. Artificial light baths are recommended and judicious sun bathing has been found of value.

The prognosis is good and complete recovery may be expected in three to six months.

REFERENCES—SWIFT *Trans Tenth Australian Med Congress* Auckland 1914 p 547. R HUTCHISON 1911 *Lancet* 2 979. JEFFREYS WOOD and TAY *Brit Med Journ* 1915 2 527, 531.

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Natural sources. The natural sources of vitamin C are fresh fruits and certain vegetables. Black currants contain the highest proportion and then come the citrus group, oranges, lemons, grape fruit. Tomatoes, rose hips, potatoes and green vegetables also contain the vitamin. In South Africa the guava is a valuable source and in the U S S R green walnuts are largely employed.

Normal requirements. An adult requires from 50 to 100 milligrammes of ascorbic acid daily. Pregnant and suckling women need 150 to 300 milligrammes (1 milligramme is equivalent to 20 international units). Senile patients and those suffering from fever should have an increase on the normal adult dose. Infants require 40 milligrammes a day.

Two types of scurvy and various sub scurvy conditions require consideration.

Scurvy, Scorbutus

It is calculated that in the adult deprivation of vitamin C will cause acute scurvy in from four to six weeks. Experience in Africa confirms this estimate where natives who make long treks to get work in the mines not uncommonly arrive at their destination suffering from frank scorbutus. Otherwise definite scurvy is now rare except in time of war and famine but sub scurvy states are far from uncommon in most European communities.

The earliest signs of deficiency of vitamin C are identical with those occurring in vitamin A deprivation, viz dry skin and follicular keratosis. Scattered acne lesions appear on the chest and back. The characteristic feature however is hæmorrhage into the hair follicles and other evidences of capillary fragility.

The vitamin is also believed to play a part in the formation of erythrocytes and deprivation is attended with anæmia. Ascorbic acid is also credited with maintaining the resistance of the body to infection (*vide infra*).

There is also reason to believe that the adrenals require a certain amount of vitamin C and that where this is deficient pigmentation of the skin occurs, just as it does from adrenal dystrophy in Addison's disease. Clinically, it has been found that excessive pigmentation associated with chronic alimentary tract disease is diminished by the oral or parenteral administration of ascorbic acid.

intolerance to the organic arsenicals The effect is not specific for ascorbic acid acts in the same way in eruptions caused by gold Serum rashes also prove less severe if the vitamin is given and some cases of urticaria are benefited by taking citrus fruits

Ascorbic acid and methæmoglobinæmia Methæmoglobinæmia which may be an inborn error of metabolism or produced by certain poisons e g sulphonamides even in medicinal doses causes the skin to take on a slate blue colour Treatment by daily intravenous injections of 100 milligrammes of ascorbic acid converts the methæmoglobin into hæmoglobin

VITAMIN D_2 and VITAMIN D_3 CALCIFEROL (Synthetic)

The natural sources of vitamin D_3 are the fish liver oils milk butter and eggs It is oil soluble Five hundred international units daily will prevent rickets in children For growing children the daily dose may be doubled with advantage Exposure to sunlight will produce a large proportion of these requirements The pregnant and suckling woman requires large doses of vitamin D

Calciferol is the synthetic equivalent with similar biological effects

The only cutaneous conditions observed in rickets are pallor and excessive sweating especially on the head

The diseases of the skin which respond well to the administration of calciferol are lupus vulgaris scrofulodermia tuberculous ulcers of the indolent type such as occur in Bazin s disease and some of the larger papulo necrotic tuberculides and some cases of acne vulgaris perniosis urticaria and eczema We have in our moderate experience not seen the beneficial results reported to have followed the giving of 300 000 to 400 000 units daily for three to six months in cases of pemphigus vulgaris dermatitis herpetiformis and psoriasis but Dowling (1946) reported good results in lupus vulgaris with continued doses of 150 000 units daily (see p 490)

VITAMIN K

Natural sources Vitamin K is present in green plants of which alfalfa (lucerne) and spinach give the richest supply Cabbage cauliflower carrot tops kale tomato and potato are less useful sources The vitamin is also found in liver oil and some other animal tissues

The *normal requirements* have not been ascertained

Effects of deficiency The essential result of deficiency is the prevention of the formation of prothrombin Hence the clotting time of the blood is increased and there is a tendency to hæmorrhages (*vide* Purpura p 264) Prothrombin is formed in the liver and fat is necessary for the absorption of vitamin K which is fat soluble Hence obstruction to the entry of bile into the bowel will impair its absorption Deficient absorption may also be caused by chronic diarrhœa such as occurs in colitis sprue and pellagra

An important effect of vitamin K deficiency is a tendency to hæmorrhages in the new born infant This inherited condition may be cured by the administration of the vitamin or an analogue (Synkavit) To anticipate such a serious affection of the infant it is suggested that the expectant mother should take the vitamin or an analogue Ten milligrammes are

ness of the face hæmorrhages into the skin and a purple swelling of the gums Actual bleeding from the gums is rare but petechiæ may be seen on the palate Beneath the periosteum of the limbs there are hæmorrhages attended with extreme tenderness There is often much œdema overlying the subperiosteal hæmorrhages and there may be bleeding into one or both orbits

Treatment Barlow's disease can be prevented by *giving the infant* orange juice A baby requires 40 milligrammes of ascorbic acid daily Infantile scurvy yields rapidly *to treatment by the vitamin*

Latent scurvy This is far from uncommon and may only become manifest on extra exertion or the advent of some intercurrent infection The possibility of an unexplained purpura being scorbutic should be remembered by the practitioner

In practice it will be found that vitamin C, even in the absence of evident sub scurvy states favours the healing of most superficial injuries *and infections of the skin for instance impetigo* Sub scurvy states may



Fig 50 Infantile Scurvy Ecchymoses and subcutaneous hæmatoma

delay the healing of operation wounds and it is now the practice of some surgeons to anticipate the development of this complication by anti scorbutic treatment especially when they operate on the alimentary tract

Bleeding gums *Trench mouth* was a common malady in the 1914–18 war It has also been seen in the recent war Ungley and Horton recently reported 51 cases of sore and bleeding gums in naval personnel, with no evidence of vitamin C deficiency *although most* of the ratings were unsaturated In 85 per cent of the patients there was *Vincent's stomatitis*

Vitamin C in arsenotherapy Hypersensitivity to the organic compounds of arsenic used in syphilo therapy occurs most frequently in persons with *vitamin C deficiency The administration of* ascorbic acid accelerates recovery from arsenical dermatitis The dose is 500 milligrammes daily for a week *It is given intravenously* and is followed by smaller doses orally This treatment of a serious and even dangerous complication has the further great advantage that full doses of the arsenicals may be resumed when the skin eruption has cleared up It is probable that vitamin C may prevent or modify other manifestations of

intolerance to the organic arsenicals The effect is not specific for ascorbic acid acts in the same way in eruptions caused by gold Serum rashes also prove less severe if the vitamin is given and some cases of urticaria are benefited by taking citrus fruits

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given daily orally or by intravenous or intramuscular injection Some cases of urticaria have responded to this therapy

Cutaneous ulcers in ulcerative colitis Deep sloughing ulcers have been observed at the Mayo Clinic and by *Hurst in cases of ulcerative colitis* They may be associated with conjunctivitis scleritis and iritis and are believed to be due to *vitamin deficiency in an anæmic subject Pellagra* may also occur (*vide supra* p 82)

REFERENCE —A F HURST (1936) *Lancet* , 1106

Carotinæmia (Aurantiasis)

Carotene is a hydrocarbon found in carrots oranges yellow turnips, spinach lettuce, beans and kale It is also present in egg yolk butter and milk and the yellow fat of animals An allied substance gives the red colour to the tomato Carotinæmia is the presence of carotene in the blood serum It is characterised by a canary yellow to orange or brown dyschromia of the extremities and occasionally of the face and trunk The sclerotics remain clear The general symptoms are wasting weakness and low blood pressure In the majority of the cases recorded there has been glycosuria Rabinovitch states that 71 5 per cent of the patients suffering from carotinæmia require insulin A yellow discoloration of the skin is found in most (but not all) patients suffering from excess of cholesterol in the blood, with or without diabetes (*vide* Xanthoma diabeticorum p 97)

Carotinæmia may be caused by dietetic eccentricities such as the ingestion of large numbers of oranges carrots, eggs and tomatoes Sequeira saw two cases in Europeans resident in East Africa but obtained no history of abnormal diets and Castellani described "ochrodermatosis or yellow disease" in Europeans living in low lying districts in Ceylon

Carotinæmia may be mistaken for jaundice but the distribution of the dyschromia on the extremities and the clear sclerotics are distinguishing features Dietetic abnormalities should be enquired into and should there be hypercholesterolæmia or glycosuria insulin and a special dietary are required

Onyalai

This disease which appears to be due to vitamin deficiency occurs mostly in *Portuguese West Africa in East Africa* Northern Rhodesia and the Belgian Congo

It was believed to be infectious and the frequent onset with fever a temperature perhaps of 103 supported this view There are mental confusion lassitude and dullness but the characteristic features are hæmorrhages into vesicles *on the hard palate the buccal aspects of the cheeks* the tongue and the lips In the native blebs containing blood may occur in the axillæ Epistaxis is a frequent symptom and also subconjunctival hæmorrhages The urine may contain blood and there may be melæna The disease may end *fatally and at* autopsy hæmorrhages are found in the pleura and peritoneum and around the *kidneys Death is often preceded by a* hæmorrhagic broncho pneumonia Fatal cerebral hæmorrhage has also been reported

It is now believed that onyalai is an acute form of thrombocytopenia due to nutritional deficiency The bleeding time is prolonged but *the coagulation time* is not increased There is an almost complete absence of platelets with severe anæmia

Treatment This consists in correcting dietary deficiencies and the administration of large doses of bicarbonate of soda Good results have attended blood transfusion and also auto hæmotherapy

Ulcus Tropicum Aden Ulcer Yemen Ulcer, etc

A chronic sloughing ulcerative process which may become phagedænic occurring in many tropical and sub tropical regions and often denoted by the name of the country in which it occurs

Tropical ulcer is of great economic importance as it causes much disability in native labour in many countries It was long held to be caused by a spirillar organism *Treponema schaudinni* (Prozaweck) E C Smith



FIG 51 Tropical ulcer (Reproduced by permission of the late Dr E C Smith)

of Lagos who studied the bacteriology however was of opinion that this organism though present is not the essential factor There is a growing accumulation of information suggesting that dietetic deficiency is the predominant cause Orr and Gilks found that phagedænic ulcer was much commoner in the vegetarian Kikuyu than in the Masai who subsist on milk and blood Forbes Brown in Uganda held that it was dependent upon environment *e g* it was rare in the better classes and better institutions Similar observations have been reported from the Pacific Islands Some striking observations were made by de Courcy Ireland Hosking and Loewenthal in Teso Uganda They found that 4 per cent of the Ajubulu a vegetarian tribe suffered from tropical ulcer while their neighbours the Opami who subsisted largely on fish from the adjacent river swamp were

free from the disease It is interesting to note that there was also a far higher incidence of another vitamin deficiency phrynoderma xerophthalmia and night blindness in the vegetarian tribe

Histology The surface of the ulcer is covered by hyaline fibrin containing masses of the spirochaetes and bacteria The sides and base of the ulcer consist of granulation tissue In the deeper parts there is an infiltration of lymphoid and plasma cells

Clinical features The ulcers occur usually on the lower third of the leg and on the dorsum of the foot other uncovered parts being less commonly affected The ulcer is usually single The first stage of the lesion is a small painful papulo pustule with a dusky infiltrated areola Suppuration occurs and sloughing follows The fully developed ulcer is perhaps a couple of inches or more in diameter covered with a thick dirty and very offensive secretion The base is red or pale and covered with flabby granulations The centre is often funnel shaped There is very little pain In some cases there is a phagedaenic process and muscle tendon and bone may be exposed

The course is chronic and the ulcer usually lasts for months showing no tendency to spontaneous recovery

Diagnosis Tertiary syphilis and carcinoma are the conditions to be remembered in diagnosis A positive serological reaction may mean that the patient is suffering also from lues or yaws and thus will call for additional treatment Squamous carcinoma may be the result of chronic ulceration A biopsy of the edge will settle the diagnosis

Treatment An obvious essential is a high protein diet Arsenicals administered intravenously have proved of value and calcium iodide has been recommended Complete rest of the affected limb is advisable Locally undiluted formalin should be applied once a day for 2 or 3 days This is followed by the application of a bismuth paste Good results have been recorded from the application of X rays and also from dressings of perchloride of mercury solution (1/1 000) peroxide of hydrogen permanganate of potash solution or an ointment of protargol 5 per cent We have found pure Stockholm tar a useful application

CUTANEOUS AFFECTIONS IN OTHER GENERAL DISEASES

Besides the avitaminoses there are many general and visceral diseases in which cutaneous eruptions occur As a general principle it may be stated that toxic conditions whether autogenous or heterogeneous may be accompanied by cutaneous lesions of the erythematous or petechial type, and it is probable that many of the rashes met with in association with visceral disease are due to toxic bodies developed as a result of the impairment of the functions of the organs involved

Here it is not proposed to do more than indicate the chief forms of cutaneous affection met with in the general and visceral affections as many of them are dealt with in other parts of this work

DISEASES OF THE ALIMENTARY CANAL

The absorption of toxic bodies from the alimentary tract is a common cause of urticaria The toxins may be introduced from without or deve

lop d in the bowel by abnormal digestive process or fermentations of bacterial origin Besides urticaria it is probable that many of the conditions classed as erythema own this cause Increased pigmentation may occur in cases of chronic intestinal stasis

The gum rash of infants (strophulus or lichen urticatus) is probably the result of alimentary toxæmia but whether acting directly through the blood or through the nervous system is uncertain

Rosacea is commonly associated with constipation and dyspepsia Some forms of eczema are believed to depend upon disorders of the alimentary canal and may respond to fasting a protein free diet or to colonic irrigation

Oral sepsis must not be forgotten as a probable cause of erythema and purpura One form of grave anæmia is associated with septic conditions of the buccal cavity and cutaneous hæmorrhages are sometimes associated with it

Diseases of the lips and tongue The differential diagnosis of diseases of the lips and tongue is so intimately bound up with general diseases that it may be advantageous here to list the more common affections These are mainly dealt with elsewhere but we include a few of the rarer conditions

In considering diseases of the lips we should consider the following —

(1) Lipstick and exogenic dermatitis and eczema

(2) Lip biting and licking of nervous origin

(3) Lupus erythematosus and lichen planus Leucoplakia of the lips

(4) Herpes erythema multiforme pemphigus and dermatitis herpetiformis Aphthous ulcers are probably herpetic

(5) Syphilis leucoplakia and cancer

(6) Vitamin and nutritional deficiencies including perleche

(7) Pus coccal and mycotic infections

(8) Retention cysts of mucous glands including *mucocele* and Fordyce disease

(9) *Cheilitis glandularis* which is related to the above and presents numerous small cysts possibly provoked by trauma from the teeth A muco purulent exudate produces thick adherent crusts

(10) *Cheilitis exfoliativa*

A chronic scaly and crusted eruption occurring on the lips It is difficult to place this disease the cause of which is unknown It occurs most commonly in young women and is somewhat rare in men It often lasts for several years

Cracks develop in the lower lip which bleed and then dry and crust over Later the upper lip becomes affected The characteristic features are black or brownish scales or crusts consisting of dried blood Under the crusts the skin is dry and shrivelled In some instances this condition is succeeded by chronic scaling the scales on separating leaving a tender red glazed surface

The mucous membrane may be involved

The usual soothing applications have little or no effect upon the eruption Applications of radium and X rays have occasionally cured the condition but frequently the benefit is merely temporary

matous change, and Kirch states that any blastoma may *become* xanthomatous from the deposit of cholesterol esters under the influence of an altered metabolism

Xanthoma may be associated with diabetes insipidus, but this may be due, *as in a case described below, to a deposit in the pituitary body*

Pathology The lesions lie in the dermis where the *foam cells* and the *Touton giant cells* are found The epidermis is normal or it may be pigmented The xanthomatous foci are rounded or in rows in the true skin *and they are separated by bundles of collagen fibres* Around the vessels there are large globular or fusiform cells with rounded nuclei, containing granules or crystals doubly refractile under polarised light These granules are also found between the cellular elements Chemically the material appears to be related to the fats, being soluble in ether and melting with heat It can be fixed with osmic acid Sudan III stains it an orange red colour The substance is removed by fat solvents in the preparation of paraffin sections and the bubble like vacuoles remaining in the affected



Fig. [illegible] Xanthoma of diabetic type Male aet [illegible] The elbows and buttocks were affected

cells account for their being called foam cells Pick has shown that the same substance is found in the blood and various organs of patients suffering *from glycosuria and diseases of the liver He considered the special material as a deposit of unknown origin and independent of fat*

Pollitzer holds that xanthelasma palpebrarum is in no way related to the xanthoma tuberosum It is in his opinion a peculiar degeneration of the muscles of the eyelid

Clinical features *The lesions take three forms*

(1) Xanthelasma palpebrarum Oval plaques of a wash leather or straw colour with a well defined margin and very slightly raised above the surface occur on the eyelids The affection is not uncommon in adults and in old people It may be associated with cirrhosis and other affections of the liver, but the patients are often apparently quite well The regions affected are the inner ends of the upper and lower eyelids close to the inner canthus They are characteristic in appearance painless and free from itching (Plate 7) Xanthelasma may be associated with xanthoma tuberosum multiplex Hypercholesterolaemia has been found in this variety of xanthoma



XANTHELASMA PALPEBRARUM

Th wa hle the s l t e l p l t p ar n e tel h l t the inn r end
The patient had also a rodent ulcer of the n[illegible]e (partly treated and [illegible] red th[illegible]) and a [illegible] tumo[illegible] on the upper lip

(2) **Xanthoma tuberosum multiplex** The lesions are papules or nodules varying in size from a pin s head to a bean Their colour varies most have a yellow tint with perhaps an areola of pink others have an earthy colour and others again are purplish and the yellow colour can only be made out upon examination with the diascope They vary in consistence some being quite hard while others are softish The lesions develop slowly coming out in crops and progressing in size sometimes coalescing to form plaques They are symmetrical the favourite sites being the elbows knees shoulders knuckles buttocks and scalp Extensor surfaces appear to be preferred Sequeira once saw a nodule on the prominence of the thyroid cartilage in a male who had an extensive outbreak on the hands and elsewhere

Plaques also occur on the eyelids and bands in the flexures and on the palmar and plantar regions

In a remarkable case shown by Dr Macleod there were irregular swellings of the wrist elbow and knee joints

Children and adults may be affected and both sexes are equally liable to the disease In the adult a history of jaundice is common In a boy of seven under Sequeira s care in whom there were numerous small xanthomatous papules and nodules widely spread over the skin nodules were found in the viscera and one in the pituitary body To the last was ascribed the diabetes insipidus which was a prominent feature of the case Syphilis was excluded by the histology of the tumours and by repeated negative Wassermann tests

Hypercholesterolæmia has been found in xanthoma tuberosum multiplex

Xanthoma diabeticorum is held by many authors to be essentially different from the preceding form The lesions are pinkish or orange red papules or nodules of small size They come out acutely affecting the extensor surfaces of the limbs neck loins and buttocks Sometimes they form rows and in one case the nodules resembled a string of yellow coral beads let into the skin about the knees The nodules itch The patients are usually middle aged men of stout florid habit and there is often a history of chronic alcoholism Glycosuria is not always present, though it may appear after the eruption has cleared up Hypercholesterolæmia has been demonstrated in cases under our care The papules and nodules may disappear in a few months or occur intermittently

(3) **Xanthoma tumours** are seen occasionally they may be sessile or pedunculated and may reach the size of a small orange

Prognosis Except in xanthoma diabeticorum the tumours tend to persist

Treatment of xanthoma When xanthomatous lesions are inconspicuous they are best left alone Xanthelasma palpebrarum often responds best to painting with 80 per cent trichloracetic acid or a minute crystal may be applied for a short while to the centre of the lesion which is surrounded by a protective zone of zinc paste until the skin becomes white over the yellow infiltrate Although excellent cosmetic results have followed the procedure in dark skinned subjects the treated area may remain very pale and even more obvious than the original xanthoma

X ray therapy may be used with caution and a dose of 200 r given

every fortnight for three doses If improvement is not seen after two months the irradiation should not be repeated

Electrolysis may be tried on very small xanthomata, but neither this nor freezing with CO snow and local light therapy have given good results in our hands

Admirable results may be obtained by excision Of course no guarantee can be given that recurrences or new deposits will not arise after any form of treatment

The Dermatoses of Diabetes

The cutaneous complications of diabetes (and glycosuria) are important The underlying disease is not infrequently overlooked if attention is only directed to the skin Diabetes mellitus may be associated with xanthoma pruritus and eczema of the genitals furunculosis and carbuncle and with perforating ulcer (For diabetic gangrene see p 126)

Xanthoma diabeticorum usually occurs in severe cases when the diet contains a high proportion of fat The cholesterol *in the blood is much* increased and in some patients there is so much fat that the plasma looks creamy The treatment consists in cutting out eggs and most fats from the diet and giving an adequate amount of insulin A high carbohydrate diet and insulin occasionally cures xanthoma in patients who have no glycosuria (see previous page)

Pruritus and eczema of the external genitalia is common in diabetics of both sexes It is said to be due to the growth of torulæ and other organisms fostered by the sugar in the urine (Eczema however, is rare in orthoglycæmic glycosuria even when there is 3 per cent of sugar in the urine (Lawton))

Eczema of the genitals usually subsides in about a week after the disappearance of sugar from the urine Treatment consists in wiping the urethral orifice immediately after micturition with a small sponge soaked in a saturated boric acid solution (The soaked sponge can be carried always in a waterproof bag) Irritation before the sugar has disappeared may be relieved by applying lead lotion

Pruritus vulvæ may occur without eczema in diabetic women Bathing with sodium bicarbonate solution (1 per cent) and the application of 1 or 2 per cent of phenol in lead or calamine lotion usually relieves the irritation In our opinion the use of anæsthetic ointments is unwise

Furunculosis The diabetic is specially prone to infection by staphylococci *but when boils occur in the subject of glycosuria* attention to the major affection requires special attention because of the curious variations in the amount of sugar passed These variations in some way appear to be related to the absorption of *toxins from the local lesions When the* boils are numerous and large the patient should be put to bed He should be washed all over twice a day and there should be frequent changes of bed clothing and sheets Both sheets and clothes should be *boiled to prevent* re infection When the patient is ambulant the underlinen should be *fresh* every day The best local application is a saturated solution of either magnesium or sodium sulphate in glycerine (*vide* p 456)

Carbuncle The necrosis which is characteristic of carbuncle (*vide* p 456) *may* start in the subcutaneous tissue and thus be independent of

want of cleanliness or trauma But four out of five carbuncles start at the nape of the neck a part constantly irritated by the collar

It is said that 20 per cent of the deaths from diabetes are due to carbuncle but Leyton who had an unrivalled experience in this disease maintained that physicians who avoided manipulation and surgical interference rarely see a case end fatally

Large and frequent doses of insulin may be required and it is recommended that the blood sugar be estimated twice daily once after the meal containing the most carbohydrates and the second four hours after the largest dose of insulin To prevent hypoglycæmia Leyton advised that the estimate after the carbohydrate meal should not exceed 0 15 and that after the insulin should not fall below 0 08 milligrammes per 100 c cm

Perforating ulcer rarely develops except in cases of diabetes of long standing The sole of the foot is affected and there may be neuritis as shown by absence of the tendo Achillis reflex Attention must be concentrated on the metabolic condition A radiograph should be taken to see if the ulcer involves bone Hypertonic baths are a helpful local measure No operation on the ulcer not even the removal of thickened skin around it should be undertaken unless there is a good pulse at the ankle

Necrobiosis lipoidica diabeticorum is a rare dystrophy of the skin occurring in diabetes The condition begins as a red somewhat thickened area usually about the dorsa of the feet or ankles or on the legs Later the central part becomes pale and atrophic with a shiny yellowish surface resembling morphœa but telangiectases and reddish spots mar the surface Apart from slight itching no symptoms are usually present Extension is slow and a red margin surrounds the atrophic plaque Ulceration may occur

Histologically there is a chronic inflammatory process with giant cells necrosis and peri cellular fibrosis

Gout It is difficult to class any form of skin disease as definitely gouty Eczema appears in gouty subjects on slight or even imperceptible irritation but it is doubtful whether the presence of uric acid is of so much importance as the chronic intoxication from the alimentary canal Acute gout may be confused with erysipelas cellulitis or erythema pernio Chronic gout presenting cutaneous tophi demands consideration of other nodular lesions of the skin The ureatic deposits may extrude through the skin and leave chronic ulcers Lichen simplex and some forms of psoriasis have been associated with raised blood uric acid

Amyloidosis Amyloidosis is familiar although becoming rare in general medicine where it is regarded as a disorder of metabolism occurring in severe chronic infections especially when suppuration is a persistent feature when some disturbance of protein metabolism leads to the deposition of amyloid in the walls of the smaller vessels in the reticulum of adenoid tissue and in the pulp of the spleen The skin is usually spared in this type with the exception of its vessels and in the rare generalised exanthem but it is involved in anomalous forms of localised amyloidosis which affect unusual sites The term lichen amyloidosis is given to one form

Clinical features Amyloidosis may be generalised and arise as an exanthem of hard translucent rather shiny papules or nodules with some pigmentation of the intervening skin The induration and small areas

of atrophy may simulate scleroderma or exhibit a lichenoid appearance The prognosis of the generalised form is grave because it is a manifestation of a wide systemic involvement Localised amyloidosis is naturally of less serious significance In appearance the lesions may be as above described and like them give rise to no symptoms, but hypertrophic lesions occur as nodules or warty masses of various sizes Pigmentation and hyper keratosis may obscure the clinical picture unless a clue is found in the translucency of solitary peripheral nodules which may however resemble sarcoid Pruritus is usually intense and persistent in the latter variety so that the lesions are taken to be hypertrophic lichen simplex or verrucose lichen planus and the real diagnosis is only revealed after a biopsy Treatment is unsatisfactory

Calcinosis cutis *The deposition of calcium in the skin may depend* entirely upon local factors or result from an increase of calcium in the blood as a metabolic disorder or from the destruction of bone Calcium salts are sometimes found in the areas of caseation of tuberculosis including lupus and in many chronic inflammatory lesions, especially in old ulcers Whenever fat necrosis occurs calcium salts of the fatty acids are likely to form so that calcium deposits are found in erythema induratum and in sclerema neonatorum they also occur in pseudo xanthoma elasticum in scleroderma and sclerodactylia and in Raynaud s disease In the above described conditions the calcium deposits are features of the histology Clinically calcinosis cutis is manifest by the appearance of slowly growing deposits of lime salts in the skin which form bony hard papules, nodules or tumours over which the skin may become so stretched as to necrose and lead to ulceration and extrusion of calcareous masses

Calcinosis cutis circumscripta Small nodules usually arise on the hands and about the joints more or less in the distribution of gouty tophi Larger nodules have been seen in the scrotum In calcinosis universalis larger deposits occur as plaques and may be followed by chronic ulceration When more generalised in the skin and connective tissues deposits have been seen in the sweat glands and in cells of the epidermis This variety has been termed metastatic calcinosis cutis

We have seen calcinosis occur in patients with acrocyanosis

Sclerema Neonatorum

(Gk *skleros* hard)

(Sub cutaneous fat necrosis Adiponecrosis subcutanea neonatorum Cytosteatonecrosis of the subcutaneous tissue of the new born Lipophagic granuloma)

This condition is a rare affection of the skin which invariably occurs at birth or within the first few weeks of life The condition was first differentiated by J W Ballantyne (1895) since when its recognition has been retarded by confusing nomenclature and we are indebted to A M H Gray (1933) for an enlightening and critical survey

Sclerema neonatorum is characterised by the gradual and symmetrical development of sharply defined areas of induration in the subcutaneous tissue affecting chiefly the calves of the legs, buttocks scapula and deltoid regions and cheeks

Etiology The essential feature is a gradual progressive solidification of the subcutaneous fat Analysis has revealed diminution in the olein content of the affected fat as a result of which the melting point of the fat is disproportionately raised and the palmitin and stearin form crystals in the fat cells A fall of body temperature would no doubt accelerate the deposition of fat crystals but this is not an essential factor Apparently the presence of the crystals stimulates an inflammatory reaction in the supporting connective tissue and accounts for the appearance of foreign body giant cells Harrison has shown that saponification does not occur in the early stages of the disease and this distinguishes it from pancreatic and traumatic fat necrosis The condition must be regarded as an obscure metabolic disorder not definitely related to cold or trauma

Diagnosis *Scleroderma* although very rare in newly born infants differs in no respect from the disease which is more commonly seen in adults *Preagonic or cadaveric induration of the cellulo adipose tissue* to use Ballantyne s full title is a very rare condition which occurs not only in infants within the first few weeks of life but also later In this condition there is a rapidly developing solidification of the subcutaneous fat tissue of the whole body occurring just before death in infants enfeebled by existing diseases of which diarrhœa is the most common The temperature is always subnormal and may fall as low as 90 or even 80 F The lower limbs are usually first affected the induration spreading upward and becoming universal In this condition analysis revealed no abnormality of the fat although it was shown by Langer that the fat of the newly born child normally contained a smaller percentage of olein than adult fat which probably accounts for the solidification which occurs so suddenly and universally in the condition of preagonic induration described above

Œdema neonatorum is a true œdema unassociated with pathological changes in the subcutaneous fat As in adults infection and toxæmia are potent causes The infants are often premature and cardiac renal and pulmonary affections have been reported The infant is debilitated listless and sleepy with feeble pulse and respiration The œdema usually begins on the lower extremities and spreads to the body The skin is dull red bluish or mottled and feels doughy pitting on pressure at first finally becoming tense Recovery is extremely rare

Treatment of sclerema neonatorum is directed to improving nutrition and conserving body heat

REFERENCE—A M H GRAY 1933 *Brit Journ of Derm and Syph* Vol XLV p 498
For *starvation œdema* and dermatoses of profound malnutrition see p 109

ENDOCRINE AFFECTIONS

The nutrition of the skin and its appendages is largely influenced by the endocrine secretion They appear to act (1) directly or (2) indirectly through the nervous system

Thyroid *Hyperthyroidism* as in Graves s disease is attended with dyschromias There may be melanodermia or leucodermia or both Flushing and excessive sweating are common symptoms Itching of the skin is of frequent occurrence Urticaria and purpura are sometimes met and œdema is not infrequent There may be excessive growth of hair and occasionally dystrophy of the nails Circumscribed myxomatous

degeneration occurs as nodules or plaques on the legs and associated with hyperthyroidism (Ingram 1933) Alopecia areata may occur

Hypothyroidism In myxoedema and cretinism the skin is usually dry and harsh the hair tends to fall out and there may be dystrophy of the nails In Lorain's infantilism *due to hypothyroidism* there may be universal alopecia (*vide* p 188) Eczema is prone to develop

Pituitary *Hyperpituitarism* In acromegaly the skin and subcutaneous tissue are thickened the pores are enlarged and the sebaceous glands are hypertrophied Hyperidrosis of the whole surface may be troublesome and intractable The greasy skin is associated *with an unpleasant odour The hair is* abundant coarse and wiry

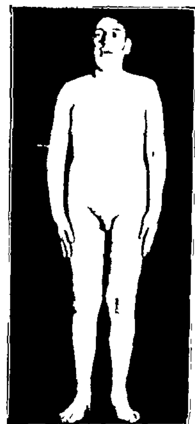


Fig 51 Hypopituitarism following injury to base of skull Male aet 20 Photograph kindly lent by Dr Cecil Wall

Hypopituitarism In this condition the skin is smooth and transparent and free from moisture The pubic and axillary hair is *absent (Fig 51) In Simmond's disease* anterior panhypopituitarism, the pubic hair is lost

It should be noted here that a similar symptom occurs in diseases of the hypothalamus due to increased intracranial pressure trauma tumour encephalitis etc *and may be associated with universal alopecia These facts suggest a close con*nection between the hypothalamus and the endocrines

In *Cushing's syndrome* the hair falls out over the vertex temporal and frontal regions There is hypertrichosis of the upper lip and *beard regions and on the thighs* legs forearms chest and abdomen The pubic hair extends in a triangle to the umbilicus Linear distensae due to adiposity are seen on the lower abdominal mammary and axillary regions *They may be wide and of a dusky* red colour rather than white

In *Frohlich's disease* the skin of the back and upper arms and the outer sides of the shins is reddened The patients bruise very easily There are large linear distensae

In *Dercum's disease* there are painful fatty tumours especially of *extremities and trophic ulcers may occur*

Adrenals In adrenal dystrophy usually tuberculous as in Addison's disease, excess of pigment in the areas normally pigmented is a characteristic feature The dyschromia is also present in the mucous membranes There is evidence that vitamin C is necessary for normal functioning of the adrenals If the *vitamin be deficient excess of pigment* may appear in the skin and this excess can be relieved by treatment with ascorbic acid (p 88)

In adrenal hypertrophy particularly where there is a malignant hyper

nephroma the patient usually a child shows among other symptoms of precocious puberty an excessive growth of pubic and axillary hair

The meningococcal adrenal syndrome is dealt with under Purpura (p 269)

Thymus In thymic dwarfism the hair is scanty and the skin generally dry and scaly Pigmentation of the scalp has also been described

REFERENCE—J T INGRAM 1933 *Brit Journ Derm and Syph* 45 10

Ovaries Rosacea and a wide variety of erythematous eruptions occur in connection with pregnancy the menopause after the removal of the ovaries and in some diseases of the female genital organs Urticaria occurs in pregnancy and in rare cases an extensive bullous eruption hydroa gravidarum develops The rare disease known as impetigo herpetiformis appears only in the pregnant woman Chloasma uterinum is a peculiar pigmentation of the face met with in pregnancy Civatte s type of poikilodermia may occur (p 274) Fall of hair is not uncommon in the later months of the puerperium or during lactation Pruritus of the external genitals may be a symptom of disease of the uterus or ovaries

Keratodermia climactericum is a localised hyperkeratosis of the palms and soles

Chloasma This term has been applied to a number of varieties of pigmentation of the skin The lesions resemble freckles but are larger macules and although light intensifies the pigmentation the primary cause is either obscure or depends upon some endocrine disturbance The latter etiological basis is indicated in the term chloasma uterinum about to be described but the condition called poikilodermia of Civatte in which the freckling is reticular and more apt to affect the sides of the face than the central part was no doubt included in chloasma uterinum and also cases of Riehl s melanosis

Anderson and Wernoe (1930) have described a similar type of pigmentation with circinate brownish rings on the forehead associated with some cutaneous dystrophy and pigmentation of the linea alba in patients with encephalitis brain tumours or organic brain injury It is possible that further sub varieties of facial pigmentation will be differentiated and removed from the non specific group which is now termed chloasma

Chloasma uterinum is a pigmentary discoloration of the face and rarely of other parts occurring in pregnancy and occasionally in uterine and ovarian disease and prone to occur at puberty and at the menopause Several varieties of peribuccal pigmentation in women and young girls have been described by Brocq and Poor and these also appear to be partly dependent upon endocrine factors—in suborrhœic subjects

Etiology The affection is related in some way with the female genital organs and has been variously ascribed to a toxæmia and to irritation of the sympathetic nerve centres in the abdomen

Clinical features Patches of a yellowish or brownish tint and of irregular outline appear on the forehead temples cheeks and rarely on other parts of the face and trunk The linea alba the vulva and the areolæ of the breasts are pigmented at the same time especially in brunettes Chloasma develops in pregnancy and persists until menstruation returns

or even longer It sometimes occurs in association with disease of the uterus and of the Fallopian tubes

The condition may be confused with the reticular pigmentation affecting the sides of the face in poikiloderma of Civatte (see p 274) which also may *be due to some ovarian deficiency*

The melanosis of Riehl and tar melanosis somewhat resemble Civatte's poikiloderma Berlocke pigmentation (p 311) may lead to confusion

Treatment is unsatisfactory

In rare cases a chloasma similar to that met with in pregnancy, etc occurs in tuberculosis of the peritoneum and in malignant disease of the abdominal organs

Dermatitis symmetrica dysmenorrhœica occurs in women with dysmenorrhœa and is believed to be due to toxic metabolism from ovarian derangement The patients often suffer from cardiac and psychic disturbances The eruption is symmetrical and affects the limbs face, and front of the trunk The lesions are urticarial at the onset and later vesico bullous They become crusted and leave stains Models suggested self production but this is said to have been excluded (Matzenauer and Polland *Archiv f Dermatologie* October, 1912, p 185)

Lichen Axillaris (Fox-Fordyce Disease)

This rare affection is characterised by pin head sized circular dome shaped, itching papules affecting the hairy parts of the axillæ and pubes

The patient depicted *in the illustration (Fig 54)* was a neurotic woman and nearly all the cases described have been in females between the

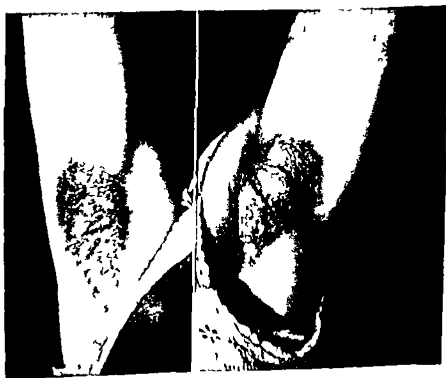


Fig 54 Fox Fordyce Disease The axillæ of a girl æt 20

ages of fifteen and forty eight the majority being in the second and third decades The eruption is uniform the elementary lesion being a dome shaped papule 1 5 mm in diameter slightly darker than the normal skin The papules may be closely set but they do not form plaques like lichen planus Both axillæ are involved and sometimes also the pubic area and the region round the umbilicus There is intense itching Histologically the lesions consist of a hypertrophy of the prickle cell layer around the epidermic portion of the apocrine glands Acanthosis hyperkeratosis (less marked parakeratosis) are seen particularly in and around the hair follicle and ducts of the apocrine glands which open either into the hair follicles or very near them into the surface of the skin These changes lead to blocking widening of the ducts inflammation of the gland degeneration and breaking of the hair There is lymphocytic and also mast cell infiltration not only in the region of the apocrine glands but also of the ordinary sweat glands penetrating the walls and destroying the functional cells Papillary and subpapillary œdema occur The inflammatory reaction about the opening of an apocrine gland into a follicle appears to indicate that the secretion of the gland is abnormal and the usual increase of irritation at the menses supports the hypothesis that the disease is a functional one of endocrine origin Improvement after treatment with ovarian hormone confirms this view

Treatment Stilbœstrol 1 mg once or twice a day or ovarian follicular hormone should be given A sedative may be necessary to relieve irritation Locally X rays 100 r to the areas repeated at two weeks intervals for 3 or 4 doses are often useful A lotion of —

Phenol liq ℳx
Sp meth indust ʒii
Liq hydrarg perchlor ad ℥i relieves irritation and prevents sepsis after scratching

Kraurosis vulvæ

(Gk *krauros* dry)

An atrophic condition in the vulva with stenosis of the orifice

Etiology Kraurosis vulvæ occurs in sterile young women after the menopause and after oophorectomy It probably therefore is dependent upon deficiency of ovarian hormone

Pathology The epithelium is thinner than normal and the papillæ atrophy There is infiltration of plasma cells lymphocytes and polymorpho nuclear leucocytes under the flattened epithelium The elastic tissue is present in the sub epidermal layers

Clinical features The labia minora the vestibule the orifice of the urethra and the vagina are affected The lesions do not spread to the perineum and thighs Two stages are described In the first the muco cutaneous surface is red and shiny and dotted over with bright red spots the size of a pin s head or larger There is usually a caruncle at the meatus urinarius In the second stage the area becomes of a pale yellow colour with a glistening surface which has been likened to the surface of a fatty liver The muco cutaneous junction is smooth and all the ridges disappear the labia minora and clitoris atrophy and the mons veneris wastes

The patient complains of soreness and pain. There is pain on micturition and dyspareunia. *In the second stage these symptoms disappear.* There is no tendency to malignant formation.

Treatment. High doses of œstrogen are required. Three to four weeks' treatment by stilbœstrol or œstrogen in 5 mg. doses daily, usually relieves the patient for a year to eighteen months. Another method is to insert a pellet of œstrogen subcutaneously and remove the remains after one to two months. Uterine hæmorrhage may be caused by such high dosage but *is not a contra indication.*

Kraurosis penis. Stuhmer, 1928, described as "balanitis xerotica obliterans," a chronic progressive atrophic sclerosing condition of the glans and prepuce. It appeared to be analogous to the vulval disease. Smooth white atrophic areas of sclerotic bands slowly constrict the prepuce or produce stenosis of the meatus. The lesions are usually confined to the mucous surfaces. Treatment has little effect unless the patient responds *to orchitic hormone.*

Other Endocrine Affections

Acne vulgaris (*vide* p. 210) in some cases in both sexes, is benefited by the administration of the *œstrogenic hormone.* A safe dosage is 1 mg. of stilbœstrol for boys and 3 mg. for girls daily for six to twelve weeks.

Endocrines and the hair. Sex hormones have a definite influence upon the growth of the hair. There is a marked dissociation between the development of the scalp hair and that of the face and pubis. Complete castration before puberty renders the face and the pubic region almost or completely hairless while there is abundant growth on the scalp and this is retained throughout life.

Virile men with full sexual potency may become completely bald and women who have developed male characters also lose their scalp hair. The withdrawal of the ovarian secretion in elderly women or in those who have had a double oophorectomy is often attended by hypertrichosis of the face.

We have already referred to the influence of adrenal and pituitary hormones on the growth of hair (p. 104). The effects of vitamin deficiency are considered at p. 86.

Scalp ringworm has been treated with success in children by the administration of hormones. The rarity of tinea capitis in adults and the tendency to spontaneous cure at puberty suggest the influence of a hormone. *It appears possible that this might act on the pH.* Poth and Kalisky treated 30 children suffering from scalp ringworm with œstrone (5,000 international units daily) or diethyl stilbœstrol 1 mg. (75,000 I.U.) a day and inunction of œstrogen. No other local treatment was employed. Twenty four of the 30 children were clinically cured in from four to nine weeks. The remaining four *had discontinued* attending. Two small girls had vaginal bleeding which subsided with the cessation of treatment.

The senile skin. Evidence has accumulated that the changes which characterise the senile skin are largely due to absence of the hormones *secreted* by the sex glands. The senile skin is dry, often generally or patchily pigmented, especially of parts exposed to sun. *It is thinner than* normal and has lost its elasticity. If pinched up into a fold the fold persists. Histologically the stratum corneum and *stratum granulosum* are

unaffected but the germinal layer is thinned and stains poorly The rete pegs are flattened as are the papillæ The collagenous bundles are swollen and the elastic tissue is diminished These conditions are found in cases of *senile pruritus*

Treatment of senile pruritus In the *female* œstrogen propionate injected hypodermically in 1 mg doses will relieve the pruritus But it always recurs Symptomatic relief follows another dose Repeated doses have the disadvantage that they may cause painful nipples and hæmorrhage from the uterus These untoward symptoms can be suppressed by injections of testosterone with the œstrogen

In the *male* testosterone propionate in 10 mg doses has a decided effect on the pruritus Here again recurrences are usual and are relieved by fresh medication A more prolonged effect can be produced by injecting 20 mg of the propionate subcutaneously

After treatment on these lines the histological picture changes The œdema of the cutis disappears and the affected cells stain normally There is no alteration in the number or character of the elastic fibres

Eunuchism Sabouraud has confirmed the old observation that eunuchs do not suffer from the common masculine type of baldness As a rule the scalp and pubic hair approach the female type

Slow Starvation The conditions in China during the past years have given opportunity for the study of the effects of slow starvation Laycock noted that the earliest symptom was œdema of the feet which ultimately became widespread The skin had a bluish tint and later became glazed Multiple fissures developed and from these there was a serous discharge Secondary infection was followed by hæmorrhagic blisters and gangrenous ulcers formed mostly on the dorsal surfaces of the feet in neglected cases Extensive œdema of the legs as high as the *popliteal spaces* prevented flexion of the knees Eczema of the genitals and scrotum the face and the backs of the hands was common Oral sepsis was frequently observed but the tongue remained clean and moist

A high protein diet liver meat fish soya beans and vitamins rapidly cured the vast majority Fatal results were associated with albuminuria

REFERENCE —H T LAYCOCK (1944) *Brit Med Jour* I 667

Acanthosis nigricans

(Gk *akanthos* thorn)

A very rare disease commonly associated with abdominal cancer characterised by itching warty growths upon the skin and pigmentation

Etiology Two types of the disease are recognised though their relationship is obscure (1) A benign juvenile dermatosis which is associated with general well being or with congenital malformations peritoneal adhesions etc and (2) the vast majority in which grave cachexia due to carcinoma sarcoma and rarely diabetes are prominent features In this type the patients are chiefly women between thirty five and fifty years of age In the majority malignant disease of the alimentary tract or the female genital organs is present In some instances the cutaneous condition has been the first evidence of malignant disease

It has been suggested that the dermatosis is caused by (1) a lesion or dysfunction of the abdominal sympathetic system but it has been seen in

association with cancer of the lung and Wise saw it in a woman aged twenty five after decapsulation of the kidney (2) *Toxæmia from* malignant growths, tuberculosis or syphilis and *exposure to sunlight* (3) A third hypothesis is that the chief factor is involvement of the *adrenals* by tumours or dysfunction of those organs (4) Finally it has recently been suggested that acanthosis nigricans is the evidence of a grave avitaminosis Hollander reports relief from treatment by large doses of vitamin B complex

Histology The cutaneous changes are hypertrophy of the horny and granular layers of the epidermis and prickle cell layer The papillæ are *elongated by the downgrowth of the interpapillary processes* The pigment is in the form of granules in the deep layers of the epidermis



FIG 5 Acanthosis nigricans (Block kindly lent by Prof Wild of Manchester)

Clinical features The skin generally is of a greyish brown tint The warty excrescences occur *symmetrically, and affect the back of* the neck and the peri anal and genito crural regions most commonly, but the axillæ umbilical region, the bends of the elbows the mammary region and the hands and feet are involved to a greater or less extent Warty growths also occur in the buccal cavity but the mucosa is not pigmented The pigmented skin varies in colour from a greyish brown to a dark brown or even black tint it is somewhat thickened and the surface is rugose from the exaggeration of the normal fissures *There is* no scaling but in the flexures, particularly the *regions mentioned above there* are isolated warty excrescences or groups of warts varying in size from elevations just visible to the naked eye to lesions as large as a small pea The skin of the hand is commonly warty and pigmented the nails are brittle and there is often considerable loss of hair The warts are not painful but there may be some itching occasionally severe The onset is usually insidious the patient first noticing the darkening of the skin in the axillæ or about the neck *or the* development of one or more warts In some instances itching has preceded *any obvious change in the integument*

The course of acanthosis depends upon the activity of the malignant process, but the prognosis is always very grave

The **diagnosis** of an advanced case is not difficult The affection which most closely resembles acanthosis is Darier s disease which usually begins early in life and affects males more than females The pigmentation is not so marked in Darier s disease the scalp is usually affected and there are peculiar histological changes (dyskeratosis) *The pigmentation might* suggest Addison s disease but the presence of warty growths is sufficient to distinguish acanthosis *nigricans*

Treatment Unless the primary cause can be removed by operation nothing satisfactory can be done Supra renal extract has been suggested

by Boeck Thyroid extract is also recommended Sedative and anti pruritic lotions may be necessary to relieve itching or superficial X ray therapy Full doses of the vitamin B complex might be tried

ORGANIC NERVOUS DISEASES

Dermatalgia and erythromelalgia *Dermatalgia* In a few rare cases there is a peculiar condition of the skin which has been called dermatalgia The affection is a local one and often located in the hairy parts The only symptom is spontaneous pain which may be associated with hyperæsthesia but the skin appears to be normal Referred pain and tenderness of the skin secondary to reflexes from visceral disease must be carefully excluded Causalgia is distinguished from dermatalgia by neurotrophic changes giving rise to glossy skin

Erythromelalgia is a related phenomenon but the characteristic features are pain and patches of erythema The pain is acute and of a throbbing burning or darting nature and it usually affects the lower limbs particularly the feet but occasionally the hands and rarely the face are involved A dependent position and warm temperature aggravate the symptoms

Erythromelalgia occurs in a number of nervous diseases viz tabes disseminated sclerosis myelitis and syringomyelia and peripheral neuritis Occasionally Raynaud s disease or phenomena indistinguishable there from co exists In some cases there is no obvious cause Gangrene of a finger has occasionally occurred

A spurious type of erythromelalgia may occur in cases of *thrombo angiitis obliterans* which is almost peculiar to Polish Jews The skin affection is characterised by redness or cyanosis with intermittent attacks of pain in the sole The affection is bilaterally *symmetrical* and the colour does not fade on pressure

The **treatment** of these conditions depends upon the cause blisters have been applied over the segment of the spinal cord whence the affected parts are supplied but other cases have been relieved by the administration of phenacetin and antipyrin Aceto salicylic acid might also be tried The local application of menthol has also been recommended The affection may be exceedingly chronic but in some cases clears up spontaneously in a few weeks

High frequency therapy is sometimes effective either locally or applied over the corresponding segments of the spinal cord Small doses 50–100 r of X rays may relieve the pain

Atrophodermia neuritica Glossy skin Glossy skin is an uncommon affection characterised by smooth glossy patches on the extremities following injury or disease of a nerve

Etiology Atrophodermia neuritica follows injuries to nerves in which there is incomplete solution of continuity or neuritis following a wound The wars have furnished many opportunities of observing this condition and the associated causalgia (thermalgia) caused by bullet wounds of nerves It has also been observed in gouty neuritis in anæsthetic leprosy and after herpes zoster and rarely in chronic diseases of the spinal cord

Clinical features The extremities are usually affected commonly the fingers The skin is dry smooth and glossy and of a pink or red colour

or mottled. The appendages suffer also: the parts are denuded of hair, there is usually an absence of perspiration though occasionally excessive sweating has been noticed, and the nails undergo peculiar and distinctive changes. The common condition is excessive *curving of the nails both in* the transverse and longitudinal directions, and whitlows are frequent. A specially important feature of this form of atrophy of the skin is intense pain "causalgia" (thermalgia) described as burning, which precedes the changes in the skin and persists. Glossy skin tends to spontaneous cure, and the treatment consists in protecting the surfaces from cold and injury. The local application of cold water usually relieves the pain; if this fails very hot water should be tried.

Morvan's disease. Syringomyelia. The cutaneous conditions occurring

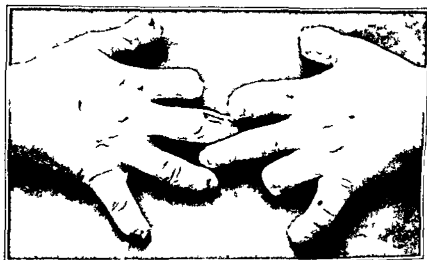


Fig. 50. Syringomyelia showing deformity of hand. (Case under Dr Henry Head.)

in this rare affection require notice in this place on account of their similarity to the lesions of nerve leprosy.

The disease begins sometimes in childhood, but usually between the ages of twenty and fifty, and it is commoner in the male than in the female. The onset is insidious, with pain in the extremities, which is followed by analgesia affecting first one side and then the other. In some cases the loss of sensation is an early, in others a late feature. The next and perhaps the most characteristic phenomenon is the development of whitlows, *usually painless but occasionally attended with great pain and* tenderness when occurring in the early stages. The fingers are most commonly affected, but similar lesions appear on the toes. The inflammation about the terminal phalanges involves the bones, and necrosis occurs, the terminal segments of the digits falling off, leaving mutilated stumps. In the photograph kindly lent by Dr Henry Head *the mutilations are* well shown. The skiagram of the same case shows complete disappearance of the terminal phalanges in some fingers and partial atrophy in other digits. Large bullæ, sometimes containing blood, may form upon the affected skin, and ulceration also occurs. As in other forms of trophic

disturbance the peculiar form of atrophy known as glossy skin develops in Morvan s disease

The muscular weakness is followed by atrophy and the contraction of the fingers leads to the formation of a claw hand main en griffe There is retention of the sensation of touch but loss of sensibility to heat and cold and this feature is an important means of distinguishing Morvan s disease from nerve leprosy It has however been shown that syringo myelia may develop in leprosy and the thickening of the ulnar and other nerves must be looked upon as the most important diagnostic feature in the absence of the recognition of the bacillus lepræ In the mixed cases of lepra there is usually no difficulty in making a diagnosis Morvan s disease lasts for many years there may be remission of the symptoms from time to time but the destructive process is slowly progressive and treatment is of no avail



Fig 57 Trophic ulcers in a case of anterior polio myelitis

Trophic ulcer (Gk *trophe* nourishment) Trophic ulcers are occasionally met with in the limbs of children affected with anterior poliomyelitis The muscles are wasted



Fig 58 Perforating ulcers Three years duration

the skin cold and purplish in tint, and one or more chronic indolent ulcers form chiefly as the result of the impaired circulation with secondary sepsis Fig 57 represents a characteristic case

The *treatment consists in keeping the limb warm* by wrapping in cotton wool and dressing the ulcers with an antiseptic and stimulant ointment

Perforating ulcer A chronic ulceration of limited area occurring usually on the soles of the feet, in the subjects of tabes dorsalis diabetes peripheral neuritis, leprosy and syringomyelia (Fig 58)

The seat of election is over the head of the metatarsal bone of the great toe or on the heel *i e*, parts exposed to pressure Both feet may be affected and the *perforating ulcers may be multiple Rarely similar ulcers* occur on the fingers and on the dorsum of the foot

A painful thickening of the skin appears first, and upon this a bleb may form and ultimately a slough Under the slough is a rounded ulcer with raised thickened edges The necrosis may involve the tendons and even the bones, or open the joint The ulcer is usually anaesthetic but there may be tenderness on pressure

Treatment The affected part must be kept at rest A salicylic acid plaster may be applied to soften the thickened skin and the area is then fomented Curetting of the surface followed by antiseptic dressing may also be tried As a rule the ulcers heal but in severe cases surgical interference becomes necessary

Psychoneuroses

Apart from the cutaneous affections which occur in relationship with organic disease of the nervous system a number of eruptions appear to be determined by acute nervous shock violent emotion and anxiety Among these may be mentioned fall of hair and changes in its colour some eczemas, lichen simplex, lichen planus, urticaria dermatitis herpetiformis the acute variety of lupus erythematosus and pompholyx (dysidrosis) In *hysteria eruptions are often produced artificially but in rare cases* it is believed that the skin affections develop spontaneously Œdema and gangrene have been observed These are dealt with under their appropriate headings

Diseases of the Blood

In *pernicious anaemia* the skin has a peculiar lemon tint and sometimes cutaneous hæmorrhages occur Sequeira had a case which was associated with intense pigmentation of the whole skin and complete loss of hair

Microcytic anaemia may be associated with cracked angles of the mouth angular stomatitis, koilonychia and often some soreness of the tongue and mouth (superficial glossitis) The Plummer Vinson syndrome is associated with leukoplakic patches *about the tongue and mouth*, throat etc which may go on to carcinomatous change

The cutaneous manifestations of leukaemia are described on p 141

CUTANEOUS ERUPTIONS IN GENERAL INFECTIONS

Acute Specific Fevers

The eruption may be —

(1) A special feature of the disease as in the exanthemata

(2) A minor feature but yet of diagnostic importance *e g* the rose spots of typhoid the petechiæ and dusky mottling of typhus and the petechiæ mottling rose spots erythema and herpes of cerebro spinal meningitis (Rolleston found rashes in more than half the cases of C S F Herpes occurred in 23 per cent)

(3) An inconstant symptom *e g* the erythema and petechiæ of diphtheria the morbiliform and scarlatiniform erythemata of influenza the herpes of pneumonia the erythemata and purpura of acute rheumatism

Septicæmia and pyæmia Rashes of erythematous and petechial types occur in many cases of septicæmia and pyæmia including infective endocarditis and miliary tuberculosis

Skin Eruptions in the Tropical Fevers

Eruptions of erythematous and petechial types occur in a number of the fevers met with in the tropics With the exception of dengue and typhus the rashes are of little diagnostic importance and in the majority the diagnosis depends upon other symptoms The following *resumé* indicates the chief features

Cerebro spinal fever The early occurrence of cutaneous hæmorrhages which is almost a constant symptom in this disease in temperate climates (p 765) is rare in East Africa (Jewell and Kauntze)

Cholera Erythematous and purpuric rashes are frequently observed The asthenic conditions may be accompanied by bedsores and gangrene Furunculosis is a common sequel

Dengue An hour or so after the onset of the fever and the severe muscular and articular pains an erythematous rash (the primary rash) appears mostly on the face and the limbs It closely resembles the eruption of scarlet fever and rarely lasts for more than twenty four hours The temperature commonly reaches the normal on or about the fifth day the defervescence being accompanied by free sweating polyuria and diarrhœa A day later the temperature rises again for a short period the pains recur and almost invariably the characteristic rash appears It begins on the palms and backs of the hands and spreads to the arms thighs and legs Two types may be recognised one closely resembling measles and the other which consists of minute bright red points like scarlatina but tending to coalesce into large areas A furfuraceous desquamation follows Patients have complained to us of intense itching a feature not specially mentioned in text books

The Enteric Group Occasionally there is a fleeting scarlatiniform eruption which precedes the development of the sparse pink papules which come out from the seventh to the tenth day In the paratyphoids the eruption is sometimes profuse and the spots are larger and have a bluish tint which does not entirely disappear on pressure Bed sores and

gangrene may occur in severe cases and furunculosis is a not uncommon sequel Alopecia is comparatively frequent and may be permanent

Kala azar (visceral leishmaniasis) The *Leishmania donovani* may cause an acute subacute or chronic affection There are irregular pyrexia, enlargement of the spleen and liver with grave anæmia and cachexia Various types of rash are met with, but the most interesting are papules which may pass on to ulceration These occur chiefly on the thighs and scrotum The organism may be found in the pus *Petechiæ of the skin* and epistaxis are not uncommon The hair often falls

Acton and Napier have studied the post kala azar affections of the skin *In the first stage there is depigmentation and* the microscope shows proliferation of macrophages about the sweat glands and the vessels of the corium A second stage shows nodules formed by granulomatous masses in the subcutaneous tissue *Leishmania* may be found in the macrophage cells In very chronic cases raised painless reddish yellow plaques may occur These contain the parasite, but do not ulcerate

Leptospirosis This widely spread disease has many names The out break of *spirochætosis icterohæmorrhagica* during the 1914–18 War attracted much attention Cases of Weil's disease occasionally occur in temperate regions, notably in Jewish immigrants in the United States

Herpes labialis is often seen at the onset of the illness and in Europeans the vesicles may be hæmorrhagic In the more severe cases petechiæ may accompany the jaundice Morbilliform erythematous and papular rashes have been observed

Malaria *Some of the text books describe a "herpetic" variety of* malaria Labial and other varieties of herpes occur with the fever and in the recurrences the outbreaks usually return in the same site Sequeira *described the case of a patient who had recurrent gluteal herpes His first* and second attacks of subtertian fever were both attended with outbreaks of herpetic vesicles in the same sites The eruption is due to the activation of latent virus (p 618)

Pappataci fever, sandfly fever This three day fever probably caused by a virus inoculated by sandflies may be attended with several types of eruption *the most characteristic being a subcuticular mottling of the* chest and abdomen

Plague In the bubonic variety the skin over the bubo may become gangrenous and slough Necrotic areas may occur in other parts Purpura may be a noteworthy feature, and this was especially marked in the 'Black Death' of the Middle Ages In grave cases pustules and carbuncles containing plague bacilli may occur In Guyaquil cases have been described which resembled small pox

It is said that labial herpes does not occur in pneumonic plague This point may be useful in the differential diagnosis of lobar pneumonia

Rat-bite fever The *Spirillum minus* is introduced by the bite of the rodent *The wound* has usually healed by the tenth day when there is a sudden onset of fever with pain and tenderness at the site of infection Blebs form and the regional lymphatic glands become swollen and tender A purplish papular rash *appears on the chest and upper* extremities This fades during the apyretic periods but can usually be made to reappear by the application of heat Areas of hyperæsthesia and œdema on the

extremities are common The spirillum can be found in the blood by dark ground illumination A single dose of 0 4 to 0 6 gram Novarseno benzol usually effects a cure *All rat bites should be cauterised as a preventive measure*

Relapsing fever An eruption of rose red spots appears occasionally on the neck the sides of the trunk the inner aspects of the thighs and the forearms Petechiæ are rare

Tropical typhus While epidemics of typical louse borne typhus occur in the tropics a much commoner and more benign condition is met with Europeans are often attacked Tropical typhus is widely spread and is described under different names in different countries A comparative study will be found in *The Journal of Tropical Medicine and Hygiene* for October 1930

The eruption comes out about the fourth day of the illness (2nd to 7th day in different areas) It is usually general and includes the palms and soles It is maculo papular roseolar to rubeolar Petechiæ are rare Brown staining is left by the rash *Rickettsia* have been demonstrated and the vector in some places is undoubtedly a dog tick

Jewell and Kauntze give a good illustration of the inflamed primary lesion in their *Handbook of Tropical Fevers* (Fig 72) The leg or arm is the common site

Scrub typhus caused by *R tsutsugamushi* was a serious menace in the areas of hostilities against Japan The vector is one of probably several trombiculide mites They attack sites bathed in perspiration *especially in subjects at rest Rats and mice are probable reservoirs* The rash is commoner in whites It comes out from the 4th to the 7th day and consists of discrete macules on the trunk They later become papular and spread on to the limbs The hands and face are rarely involved The eruption often escapes notice in black subjects (p 643)

Trypanosomiasis It is generally said that the incubation period of sleeping sickness is from two to three weeks but two carefully observed cases in Europeans in Kenya showed symptoms not more than seven days after the bite of the tsetse fly The wound produced becomes inflamed and indurated and trypanosomes have been demonstrated in the initial lesions The organism may be found in the blood as early as the 21st day

The rash is of dusky red macules mainly on the anterior surface of the body In some cases there is a circinate erythema resembling a secondary syphilide This occurs most often on the trunk Raised solid patches of pink colour which may reach 1½ inches in diameter may replace the circinate erythema Some writers stress the fact that they rarely see these early eruptions

In the late stages when there is grave asthenia bedsores and septic conditions are common in neglected natives

Tularæmia An erythematous macular papular or nodular eruption may appear from the third to the seventh day The rash may be transient or last for a couple of months (p 470)

Undulant fever A fleeting erythema and rarely purpura may occur

Yellow fever The intense jaundice may be accompanied by petechiæ

CHAPTER X

CIRCULATORY DISORDERS—VASCULAR AND LYMPHATIC

Varicose Veins—Cutaneous Gangrene—Raynaud's Phenomena—Elephantiasis

In this chapter we propose to review the affections contingent upon chronic obstruction of the blood and lymphatic vessels. Some of these have been dealt with elsewhere and will be merely referred to in passing, but the affections dependent upon varicose veins and the forms of gangrene met with in dermatology and the varieties of elephantiasis demand special notice.

Affections due to Varicose Veins

Varicose veins tend to produce a number of cutaneous affections, particularly if the subject is obliged to stand for long hours at work. There is an undoubted inherited tendency to their development, but general debility, ill health, pregnancy, and illness are also determining factors. The valves of the veins become incompetent and as a result the flow of



Fig. 51.—Varicose dermatitis.

blood in them is entirely determined by gravity, *i.e.* in the horizontal position it is negligible, but in the erect position it is in the wrong direction unless modified by muscular action. Primarily, varices cause a chronic congestion of the integument of the lower extremities and consequent impairment of its nutrition. The lowered resisting power of the tissues

renders them prone to bacterial invasion particularly by the streptococci Varicose veins may be the direct or indirect cause of (1) oedema (2) pigmentation (3) dermatitis and eczema (4) ulcer (5) thrombo phlebitis, (6) lymphangitis (7) elephantiasis (8) sclerosis

The pigmentation is caused by the chronic congestion and the escape of red corpuscles into the tissues The local predisposition to eczema will be considered later (p 148) Phlebitis and lymphangitis are due to streptococcal infection and if repeated tend to elephantiasis (p 127) The sclerosis is the result of repeated attacks of inflammation of the dermis and hypoderm

Varicose ulcer The so called varicose ulcer may follow a bruise or



FIG 60 Varicose ulcers

slight traumatism It may also be caused by (1) the rupture of a vein (2) phlebitis (3) eczema (4) impetigo *In all these* conditions a normal skin would be affected temporarily and ulceration *is uncommon* but where *there are* varicose veins the resisting *power of the tissues is lowered* and chronic microbic inflammations are often set up One of the commonest is caused by *streptococci* possibly of low grade pathogenicity but active in a partially devitalised area An inflammatory lesion is the usual precursor of the varicose ulcer *Fractures and* severe injuries damaging the vessels and deep thrombo phlebitis may *produce a similar* effect to varicose veins

Clinical features The ulcer is commonly *situated in the* lower half of the leg and most frequently on the inner surface The skin over the malleoli being exposed to trauma is often affected The lesion is ovoid or

round, but by the fusion of neighbouring ulcers areas with a polycyclic outline may be involved. The varicose ulcer may be of large size, sometimes encircling the leg. The edge is sometimes steep and sometimes undermined, and it may be indurated and adherent to the subjacent tissues. The base of granulation tissue is red or purplish, and blood may ooze from it. In neglected cases the floor of the ulcer is often covered with greyish sloughs and fœtid sanious pus. If the sores are kept clean the exudation may be mainly serous. The ulcer is remarkably insensitive and callous, and particularly intractable if the base is adherent to the bone.

The lymphatic glands in the groins are enlarged.

The diagnosis of varicose ulcer may be attended with great difficulty. In practice it will be found that the ulcerating syphilides and gummatous ulcers give the most difficulty, but some of the chronic tuberculides and ecthyma may also require careful discrimination. The ulcerating tertiary syphilides are commonly multiple, and affect the extensor and often the upper aspect of one limb. They are grouped in circles or parts of circles. The syphilitic gumma begins with a node-like swelling, which softens in the centre to form a punched-out ulcer with a wash-leather-like slough on the floor. In doubtful cases the Wassermann or Kahn test should be applied or the effects of mercury and iodide of potassium should be tried. The tuberculous ulcers usually occur in younger subjects. In Bazin's disease they are bilaterally symmetrical, and affect the calf more than the inner side of the leg. In ecthyma the lesions are small and multiple, and the ulcer under the scab is comparatively superficial and has shelving margins. The concomitant symptoms—varicose veins, œdema, pigmentation and sclerosis—will be useful points in favour of varicose ulcer.

Prognosis. With rest in the horizontal position varicose ulcers tend to heal rapidly, but a return to the vertical position often leads to relapse. In patients of the labouring classes the limbs may be affected for years.

Treatment. Treatment should be directed—

(1) To improve the local circulation to the limb and to overcome mechanical disadvantages which result from incompetent valves in the varicose veins.

(2) To the removal of chronic œdema.

(3) To the treatment of the skin lesion—dermatitis, eczema, or ulcer.

In the first place, rest in bed with the limb elevated is the most satisfactory procedure for severe cases of ulceration. Here gravity assists the circulation and the return of lymph from the œdematous limb. In less severe cases, firmly applied adhesive bandages of the Elastoplast type have been found to be very effective in removing chronic œdema, and the ambulatory patient thus treated provides automatic massage of the limb by his muscular action and the response of the elastic bandage. It is an advantage to apply the bandage after the patient has had the leg elevated for some time, and in most cases the bandage should commence behind the toe clefts and extend to the knee. Some authorities advise applying the adhesive bandage directly over ulcers and areas of dermatitis with a slight preliminary cleansing and drying of the skin. Very infected ulcers may have to be covered with several layers of gauze soaked in 2 per cent aqueous gentian violet before the bandage is applied. If the patient complains of much irritation it is wise to remove the bandage to see if an

eczematous process is developing because some patients are intolerant of adhesive plasters but may react to one make of bandage and not to another Bandages are available with half or one third of their surface covered with adhesive so it is possible to apply the bandage technique without the adhesive plaster touching the skin

Large varicose ulcers are best treated with an open technique in bed Penicillin cream or the various aniline dyes may be used and if the granulations are sluggish a useful preparation is equal parts of scarlet red ointment and yellow oxide of mercury paste to which 10 per cent of cod liver oil may be added When granulations are excessive astringent lotions of zinc or copper sulphate or silver nitrate may be applied A cradle is useful to keep the clothing from touching the skin Various forms of physiotherapy may also be employed with advantage

Keratinisation of the granulating surface is often retarded by heat and moisture and it is advantageous to expose these lesions to the air in many cases the skin need not be covered if a bed cradle is used

In large indolent ulcers skin grafting may be required and indeed amputation may have to be considered but with patience and intelligent use of the methods outlined this ought to be a very rare procedure

Varicose eczema and dermatitis should be treated on the usual lines If intolerance to certain plasters has been discovered these irritants should of course be avoided and this applies to the sulphonamides which are very apt to cause trouble In order to prevent relapses the dilated veins should be controlled by pressure with an elastic bandage or an elastic stocking Permanent relief may often be secured by injecting diseased veins with a thrombosing substance Solutions of quinine and urethane and 5 or 10 per cent sodium morrhuate have stood the test of time and more recently ethanolamine oleate or similar organic salts of the fatty acids have been valuable additions to this method of treatment The object is to damage the intima of the veins by chemical action or by osmotic effect as when using very hypertonic solutions such as salt or glucose A firm sterile clot is then built up on the damaged surface until the vein has clotted

In very large veins canalisation is not uncommon either through imperfect occlusion or as a secondary process occurring later It is advantageous therefore to combine high ligature with distal injection and in cases requiring this more radical treatment the assistance of a surgeon is desirable

Compressive bandage technique In using elastoplast bandages we would urge that the leg should be rested to reduce swelling and that the whole leg should be painted with a watery solution of an aniline dye before the application of the bandage which should be from toes to knee Strips of elastoplast along the outer and inner sides of the leg prevent the bandage cutting into the fragile skin and this whole procedure reduces the risk of irritation from the bandage or from follicular or other infection

Ulcer or eczema can receive suitable treatment—as by Lassar s or tar pastes cod liver oil or X rays—before the application of a bandage Useful pressure can be brought to bear upon the base of a deep ulcer by covering the ulcerated area widely with a sheet of sorbo rubber pared down towards the margins to prevent its cutting into the skin

Viscopaste or Unna's bandage may be used if Elastoplast is not tolerated. This is a cotton bandage impregnated with a paste of zinc oxide, glycerin, gelatin and water, which is liquid when heated but sets hard on cooling. It is not, of course, elastic.

It is applied like the elastoplast bandage from the toes to the knee *after the swelling of the leg has been reduced by rest*. It is replaced every three or four weeks and affords an excellent non-irritating support. It is quite effective and sometimes an advantage to apply a thin layer of viscopaste bandage over a leg prior to the application of an elastoplast when the skin is sensitive.

Good quality crepe bandages accurately applied are a valuable support, but these bandages soon lose their elasticity and need to be frequently renewed.

The necessity for continued support after treatment and apparent cure cannot be too strongly stressed.

Schamberg's disease is mentioned here because similar changes are seen as sequela of varicose veins. Described by Schamberg in 1901 as a peculiar progressive pigmentary disease of the skin, this somewhat rare and probably often overlooked affection is characterised by groups of minute reddish brown puncta which coalesce to form brown patches. All the recorded cases have been in males. The lesions occur on the usual sites of varicose lesions. *The colour does not disappear on pressure* and there is some atrophy in the older lesions.

The eruption persists for many years and slowly extends and is apparently unaffected by treatment (see p. 271).

Histologically the lesions consist of dilatation by blood vessels with localised cell exudation or proliferation. The pigment is hæmosiderin and melanin.

Cutaneous Gangrene

Local necrosis of the skin may be due to—

(1) Severe traumatism.

(2) Physical causes:—intense heat and cold (p. 301), prolonged exposure to the X rays and radium (p. 314), *powerful electric currents*, high frequency electricity.

(3) Chemicals:—strong acids and alkalies, chloride of zinc, arsenic, carbolic acid, chromium.

(4) In rare cases carbon monoxide poisoning, chloral hydrate, iodides and arsenic may cause gangrenous eruptions.

(5) Virulent bacterial infection:—dermatitis gangrenosa pyogenica or infantum (p. 451), ulcus molle (p. 588), lymphogranuloma (p. 638), noma (p. 452), gas gangrene.

(6) Diabetes (p. 126).

(7) Nervous diseases:—syringomyelia (p. 112), nerve leprosy (p. 507) and, *in association with pressure*, the bed sore of myelitis, compression paraplegia, etc.

(8) Interference with or suppression of the blood supply:—

(*a*) Pressure on the vessels by *neoplasms or exudations*.

(b) Contraction of the muscular coat in ergotism and Raynaud's disease

(c) Diseases of the intima or vessel walls —endarteritis obliterans syphilitic endarteritis atheroma periarteritis nodosa (p 126)

(d) Obstruction of the lumen by thrombus or embolus

Some of these conditions are considered in other parts of this work and others are more fittingly dealt with in the text books on surgery and medicine (see Plate 8)

Ergotism The prolonged use of ergot or more commonly the use of rye infected with the *claviceps purpurea* causes a local gangrene probably due to spasm of the arterioles

The gangrenous process affects the toes and fingers and occasionally the ears It is usually preceded by loss of sensation or by tingling and pain There may also be spasms of the muscles The necrosis is the result of stasis in the small vessels The treatment of the local conditions is on the same lines as that of peripheral gangrene

Bed-sore

The bed sore is a form of gangrene of the skin and subcutaneous tissue caused by intermittent or continuous pressure in a patient suffering from acute or chronic disease It is particularly liable to occur in certain nervous affections myelitis compression paraplegia hemiplegia etc

The areas commonly affected are the sacral and lower vertebral regions the trochanters and malleoli and the heels The parts first become congested and œdematous and necrosis follows A greyish brown slough forms and this covers an ulcer The ulcer may extend down to and expose or even involve the bone In some cases from secondary infection the gangrenous process is not limited to the parts exposed to pressure but spreads widely beyond them

Bed sores are uncommon in patients who are carefully nursed They can usually be prevented by frequently changing the position of the patient in bed by the distribution of the pressure by the sorbo rubber or water bed and pillows and by keeping the parts clean and dry The greatest difficulty occurs in nervous cases in which the excreta are passed into the bed In these only the unremitting care of the nurse can prevent bed sores Spirit lotion is used to harden the skin and the parts are frequently dusted with powders of zinc oxide and starch or siliceous earth with boric acid If the surface is broken the bed sore may be dressed with Tr Benzoin Co or with boric acid ointment The ulcer itself should be surrounded with a circular water pillow or a ring of thick plaster to prevent pressure If there be septic infection penicillin cream tulle gras cod liver oil and the anilin dyes may be used with advantage

Raynaud's Syndrome

According to Hunt 1936 **Raynaud's syndrome** may be defined as Intermittent pallor or cyanosis of the extremities precipitated by exposure to cold without clinical evidence of blockage of the large peri

pheral vessels and with nutritional lesions, if present at all, limited to the skin' In other words, 'Attacks of 'dead' fingers or toes brought on by cold, without obliteration of the pulse or massive gangrene' Lewis and Pickering have given us a physiological definition They say "Raynaud's syndrome may be defined as the active and intermittent closure of small arteries of the order of digital arteries, supplying the extremities it shows itself clinically by discoloration of the parts affected, they become fully cyanotic or waxy white in colour often numb and their temperature falls to that of the surrounding air"

The phenomenon occurs in ten or more conditions details of which will be found later They may be divided clinically into three main groups

(1) When Raynaud's phenomenon occurs alone

1 In normal persons exposed to cold long enough to lower the blood temperature
2 Hereditary cold fingers
3 Raynaud's disease
4 After local injury to the hands and feet and in workers with vibrating tools

(2) When Raynaud's phenomenon precedes, perhaps for several years a condition of permanent coldness and cyanosis of the extremities

5 Sclerodactyly (acrosclerosis)

(3) When Raynaud's phenomenon is a temporary, often insignificant, phase in the development of gross vascular disease of the extremities

6 Thrombo angeitis obliterans
7 Arteriosclerosis
8 Syphilitic arteritis
9 Rheumatic (?streptococcal) arteritis
10 Cervical rib (a very few cases)
11 In advanced pulmonary tuberculosis leukæmia and polycythæmia vera lupus erythematosus malaria chronic arsenical poisoning etc An ill defined group needing further subdivision

Raynaud's Disease

A vascular syndrome characterised by (1) local syncope (2) local asphyxia and (3) local gangrene The extremities are usually affected and the phenomena are bilaterally symmetrical

Etiology Raynaud's disease occurs most frequently in adolescence and early adult life Exposure to cold may determine an attack but in some cases emotional disturbance and gastric disorder appear to be determining factors The actual cause is unknown but in some cases there is a syphilitic basis and in others lead, tobacco and malarial infection have been associated factors

Pathology The local syncope is believed to be caused by spasm of the peripheral arterioles The asphyxial condition is due to stasis and dilatation upon the venous side The capillary circulation is thus impaired and as a result the reaction of the skin to histamine is delayed and diminished The gangrene is caused by complete or partial suppression of the blood supply

Clinical features (1) *Local syncope* The condition is commonly known as dead fingers One or more fingers or the distal part of the hand becomes white and cold and anæsthetic The pallor may last for an hour or more and then there is a gradual reaction the parts become red and hot and the patient experience a sensation of burning In many cases there is a slight degree of asphyxia also and different fingers may be affected with syncope or with asphyxia

(2) *Local asphyxia* In its mildest form this is seen in the chilblain circulation when it occurs intermittently with acrocyanosis This relatively common perniotic condition should not be confused with the rarer and more serious affection described by Raynaud The acro asphyxia may follow the local syncope or it may be independent of it The fingers and toes and the ears and occasionally the nose are affected In rare cases other parts of the limbs may be involved

The fingers swell and become intensely congested they assume a livid colour with perhaps bright patches of erythema upon the livid area The swelling of the digits impairs their mobility and there are sensations of tension and actual pain In some cases the affected parts are anæsthetic The attacks of asphyxia return again and again over many years and the recurrences are determined by exposure to cold or by emotional disturb ance and are sometimes associated with gastric disorder

The general health is usually unaffected

(3) *Local or symmetrical gangrene* The recurrent asphyxial attacks may leave small necrotic areas on the tips of the fingers or toes or on the edges of the auricles In some cases there is considerable thickening of the distal parts of the digits In the more severe cases the terminal phalanges become insensitive black and cold and the skin necroses forming blebs There is the usual line of demarcation of the gangrenous area and a portion of the extremity sloughs The actual destruction is generally less than the severity of the phenomena would suggest but parts of the fingers or of the nose or ears separate In some cases only one digit is affected In very rare instances the gangrenous process involves the limbs more extensively and patches may occur on the trunk Some cases of multiple gangrene in children appear to be of the same nature Spontaneous amputation of parts of the limbs has been observed

It is interesting to note that some patients suffering from Raynaud s disease present symptoms showing that the affection is not purely local The most important of these is paroxysmal hæmoglobinuria occurring on exposure to cold Occasionally there are temporary loss of consciousness giddiness lethargy headaches transitory hemiplegia and peripheral neuritis Epistaxis may occur

It is important to remember that the Raynaud syndrome may be caused by congenital or acquired syphilitic disease of the vessels and in all cases the Wassermann reaction should be examined

Treatment In the slighter cases no special treatment is necessary In the more severe ones the patient should be kept in bed and all exposure to cold must be avoided The affected parts should be wrapped in cotton wool Massage may be found of value Resection of the sympathetic perivascular trunks or the extirpation of the ganglionic centre is the most effective therapeutic measure Galvanism pyretotherapy with T A B

vaccine and injections of acetyl choline have been recommended Small doses of thyroid with phenobarbitone may relieve arterial spasm Nitro glycerine and the nitrites have been found to be of temporary service Should there be evidence of syphilis, as shown by the history or positive Wassermann reaction antisyphilitic treatment is of course, indicated The gangrenous conditions require the application of dry antiseptic dressings The general health demands attention and the diet should contain plenty of fat

Other varieties of Gangrene

Diabetic gangrene usually affects all the tissues of part or of the whole of an extremity or of the genitalia but most commonly affects the toes It may follow a slight injury or infection but often there is no history of traumatism In some cases the gangrene is in the form of disseminated patches This form originates as a spreading bullous eruption The central lesions heal up while fresh blebs form at the margins of the affected area In all probability this eruption is caused by streptococcal infection The prognosis is not necessarily grave In other cases the gangrenous process develops upon a pre existing eczema or impetigo

The essential pathological basis for diabetic gangrene is the ischæmia resulting from arterio sclerosis affecting the smaller vessels which by radio graphy may be seen to be calcified No doubt the disturbance of tissue metabolism also predisposes to necrosis

In severe diabetes especial care should be given to the hygiene of the feet and the absence of pulsation in the dorsalis pedis artery should be regarded as a danger signal Examination should be made for ingrowing nails septic corns and fissures and scrupulous surgical cleanliness is called for in the treatment of these lesions

The treatment must be directed to the general condition The parts must be protected by wrapping in cotton wool and strong antiseptic applications should be avoided Surgical measures may be necessary

Gangrene due to obstruction of the lumen of the vessels This occurs in the aged (senile gangrene) from arterio sclerosis, arteritis obliterans or syphilitic endarteritis and gives rise to lesions exactly similar to those *described above (Plate 8)*

Periarteritis nodosa is a disease, probably of infective or allergic origin, in which eosinophilic infiltration of the walls of smaller vessels may give rise to nodose thickening aneurysmal swellings hæmorrhages thromboses, gangrene etc This may occur in any part of the body and in any organ and is associated with pyrexia grave ill health and a great variety of obscure and puzzling symptoms

In the skin it may be responsible for a nodose erythematous rash, more or less profuse the individual lesions somewhat resembling erythema nodosum It may also give rise to necrotic ulcers, gangrene of extremities as well as purpura and hæmorrhages of varying degree

The true diagnosis is rarely made before death in this disease but it should be considered in cases of pyrexia of unknown origin with superficial or deep lesions or visceral symptoms which might be explained by vascular damage Excision of a skin lesion for histological examination of the vessels may enable a diagnosis to be made



DRY GANGRENE
In an elderly woman

PLATE 9



ELEPHANTIASIS NOSTRAS
(Pachydermia and papillomatous excrescences.)

Gas gangrene This condition is essentially of surgical interest It is not seen by the dermatologist

General symptoms and treatment of gangrene In *dry gangrene* there is interference with the arterial supply but the return of blood and lymph is unchecked The tissues become mummified but there may be no septic infection The areas are of a brown purplish or yellow tint slightly depressed below the surrounding skin They are cold and hard to the touch and anæsthetic The patient may complain of irritation burning tingling or of acute pain In course of time a line of demarcation forms between the living and the necrosed tissue The slough contracts and is eventually thrown off Amputation is usually necessary but where there is advanced disease of the vessels or some grave constitutional cause it is often better to avoid operation and allow the natural process of removal of the dead tissue to take place with as little interference as possible The parts must be kept scrupulously clean and dry and dressed with antiseptics and wrapped in cotton wool The process of separation may take a long time and is often painful

In *moist gangrene* the tissues generally are sodden because there is obstruction to the return of blood and lymph Blebs form upon the dark purplish or greyish soft skin and these blebs often contain blood Such a condition is highly favourable to bacterial invasion and upon this depends the rapidity and extent of the destruction It may be necessary to amputate before there is a definite line of demarcation

OBSTRUCTION OF LYMPHATICS

Elephantiasis and Pachydermia

(Gk *pakhus* thick)

Any condition which causes the blocking of main lymphatic trunks and especially the obliteration of the finer lymph channels may cause the remarkable hypertrophy of the skin and subcutaneous tissue to which the name pachydermia has been applied The surface of the thickened integument often becomes verrucose Elephantiasis *is the term* applied to a grossly enlarged limb or part

The nomenclature is somewhat confusing but we find it convenient to retain the name Filarial elephantiasis for the original disease to which the name was given *E nostras* is useful to designate other varieties We propose to drop the term pseudo elephantiasis' and speak of tuberculous or syphilitic forms of elephantiasis etc *where the cause is apparent* It will therefore be useful at the outset to enumerate the conditions which may cause elephantiasis and pachydermia These are —

(1) A congenital often hereditary and familial obstruction of lymphatic trunks known as trophœdema (Milroy s or Meige s disease)

(2) Blocking of lymphatics by *Filaria* (*Wuchereria*) *bancrofti* and *Onchocerca volvulus* This is the usual cause in the tropics but even in these cases recurrent streptococcal erysipelatoid attacks appear to be an important feature of the elephantiasis

(3) Streptococcal and possibly other microbic infection (Phlegmasia alba dolens should be included here)

(4) The pressure of cancerous tumours

(5) The extensive removal of lymphatic glands

(6) Tuberculous lymphangitis (p 187) leprosy (p 505) tertiary syphilis (p 544) yaws (p 595) lymphopathia venerea (p 638)

(7) Venous obstruction, *e g*, varicose veins

(8) Fractures and operations (*e g* on breast) interfering with the lymphatic flow

It must be noted that in the majority of the conditions enumerated recurrent erysipelatous attacks, *i e*, streptococcal infection, are an important feature and even in filarial elephantiasis must be deemed an *essential factor in causing elephantiasis*

Pathology The characteristic features are firstly an acute inflammation of the lymphatics and secondarily of the associated glands The next stage is œdema, due to changes in the lymphatic vessels A solid œdema follows This leads to hyperplasia of the skin and subcutaneous tissues The macroscopical anatomy studied in amputated parts shows that the tissue is hard and tough and gelatinous on section Plasma exudes from the cut surface The dermis may be from ¼ to 1 inch in thickness and the subcutaneous tissue is often two or three times its natural volume and intimately adherent to the subjacent tissues The lymphatic channels and the veins stand widely open on the cut surface Histologically the tissue is found to consist of round or spindle cells with masses of leucocytes and plasma cells in the meshes of the connective tissue The walls of the vessels are thickened, the glands of the skin atrophic The fat of the hypoderm is often increased In the pachydermatous skin the papillæ are elongated and there is hyperkeratosis

The microscopic appearances indicate that the process is inflammatory and not a simple œdema

Elephantiasis nostras

(1) *From recurrent erysipelatous inflammation etc* In a considerable number of cases there is some evident breach of the surface which allows the entrance of the infecting organism usually the streptococcus There may be obvious lymphangitis with swelling redness pain tenderness and pyrexia, and enlargement of the lymphatic glands In other cases there is erysipelas or cellulitis

The inflammation passes off in a few days but it is noticed that the parts are slightly swollen From time to time often at short intervals fresh attacks of lymphangitis or of erysipelatous inflammation occur and after each there is a further increase in the size of the part ultimately resulting in chronic hypertrophy

When the lower limb is affected the member may be nearly half as large again as the corresponding leg The surface may be quite smooth and shining or pigmented or purplish in colour In other cases the surface is scaly or verrucose with papillomatous excrescences (Plate 9) In many instances there are soft compressible swellings which on puncture exude clear lymph or a milky fluid Such swellings are lymph varices (lymphangiectases) Similar conditions follow ulcers of the legs,

chronic eczema etc In some cases there are no inflammatory symptoms and no pyrexia but a similar change is found in the tissue affected There appears to be some general or local predisposition for the erysipelatous attacks may have no obvious cause

In adults the lower extremities are the common site In young subjects the lips may be involved and the swelling causes great disfigurement (Fig 62) Recurrent attacks of erysipelas may lead to extensive swelling



Fig 61 Elephantiasis nostras

of the eyelids the nose the auricles and other parts of the face

(²) *From disease or removal of the lymphatic glands* Elephantiasis may follow extensive removal of the lymphatic glands and also tuberculous disease sclerosing syphilitic adenitis and cancerous metastases It is an important feature in lymphopathia venerea (p 638) where it affects the female external genitals (esthiomène) and may be extensive in the lower limbs if there be surgical interference in the disease

The lower limbs and the external genitals are usually involved in the syphilitic forms (Fig 201) Both the upper and lower limbs may be affected in tuberculous lymphangitis (Fig 253) The upper limbs are involved in cancer of the breast The affected parts become enormously swollen and painful At first they pit on pressure but ultimately they

become indurated In cancer *en cuirasse* the diffuse infiltration is often mainly due to lymphatic obstruction

(3) *Congenital elephantiasis* In rare cases an elephantiasic condition is congenital There appear to be two types (*a*) one due to an anatomical anomaly and (*b*) trophœdema (p 58) which may not appear till early adult life and possibly due to vaso motor neuroses In the case figured here (Fig 63) the patient, a girl of sixteen had suffered from swelling of



Fig 62 Elephantiasis of lip from recurrent streptococcal inflammation Girl at 15

the leg and thigh from birth The limb was much enlarged the surface white and glistening and upon it there were numerous small translucent vesicles Some of these ruptured spontaneously from time to time giving exit to a milky fluid The quantity lost was very large and the girl was emaciated On two occasions operations had been performed with the object of removing a tumour in the upper part of the thigh One operator found that the growth which was evidently lymphangiomatous extended into the abdominal cavity and could not be removed By removing fatty foods from the dietary the fluid became clear and translucent but the

chylous character returned a few hours after the patient had taken a meal containing butter and milk

Diagnosis Where the elephantiasic condition follows disease or removal of the lymphatic glands there is no difficulty In the inflammatory type the history of repeated attacks of erysipelatous inflammation or



FIG 63 Congenital elephantiasis Numerous vesicular lymph varices

lymphangitis with the progressive enlargement of the affected areas are sufficiently characteristic

Prognosis If of long duration and if the cause cannot be removed there is no prospect of improvement

Treatment The acute attacks of inflammation are treated on general lines the parts being kept at rest and the inflammation soothed by the application of lead lotions ichthyol (40 per cent in vaselin) or by fomentations Penicillin and the sulphonamides are of great value in these out breaks The general hygiene requires attention and good food is essential Compression of the swollen limb by properly fitting bandages may be used with advantage where an extremity is affected Lymphangioplasty has been performed but without obvious benefit in our experience

extreme elephantiasis. Whether the parasite causes obstruction of the lymphatics or predisposes to lymphatic inflammations of bacterial origin is uncertain. The phenomena of filarial fever point to the latter. In extreme cases ligature of the femoral artery has been practised in elephantiasis of the leg. Amputation of the enlarged scrotum or limb may be necessary. In early cases removal of the patient to a temperate climate has proved beneficial. Antimony given intravenously or intramuscularly appears to diminish the number of filariæ in the circulation, but the effect is not permanent. Intramuscular injections of "Oscol stibium," a colloidal preparation of antimony, in doses of 0.5 to 1 c.c. every second day are recommended by Anderson. "Filarial fever," when due to streptococcal infections, which are an important factor in elephantiasis, requires early treatment with penicillin or a sulphonamide, but these remedies have no lethal effect on the filariæ.

REFERENCES.—C. DANIELS, *Trans. Roy. Soc. Med.* (Tropical Section), 1913, XXVII, p. 25 (Discussion). GITTINS and FRASER, *Brit. Med. Jour.*, 1935, i, p. 90.

CHAPTER XI

RETICULO ENDOTHELIOSES OF THE SKIN

Mycosis Fungoides—Hodgkin s Disease—Leukæmia Cutis—Kaposi s Sarcoma

The diseases which are grouped under the heading of reticulo endo thelioses and which arise from the reticulo endothelial tissues scattered throughout the body show some features which are suggestive of the chronic infective granulomata and others which resemble the malignant neoplastic diseases This applies to the histo pathological as well as the clinical features

The group includes the leukæmias of all types acute and chronic lymphatic and myeloid with their characteristic blood changes It includes leukæmia cutis (where changes in the blood may be absent) Hodgkin s disease and mycosis fungoides By some authorities sarcoidosis and the sarcomata are included under this heading but we have dealt with them elsewhere excepting the multiple idiopathic pigment (so called) sarcoma of Kaposi

The commonest and earliest symptom is intense itching which may be followed by an eruption indistinguishable from urticaria or eczema seborrhœic dermatitis psoriasis exfoliative dermatitis or other non specific reactions

Cellular infiltration follows in a diffuse or focal fashion (papular nodular lichenoid or plaque) and can be distinguished clinically and histologically The pathology may not be distinctive of any particular disease but may merely indicate that it is of the group of reticulo endothelioses

Sometimes the infiltrated tumours may later involve the skin mucous membranes and viscera and may ulcerate or fungate

For a period the response to X ray therapy is dramatic but the ultimate prognosis is fatal

Mycosis Fungoides Granuloma Fungoides

(Gk *mukes* mushroom)

It is difficult to place this remarkable disease By some it is looked upon as allied to the sarcomata and by others as connected with cutaneous leukæmia The histology presents difficulties In part the appearances simulate a granuloma and again a neoplasm The clinical course suggests a similar view but the later stages are more like those of a new growth

Etiology *The cause of mycosis fungoides* is unknown It is not hereditary and not contagious Of 74 cases collected by Sequeira 46 were males and 28 females Most of the patients were between thirty and fifty years of age the extremes being fifteen and seventy four Rarely injury appears to be a cause but no organism has been isolated

Pathology By the kindness of Professor H M Turnbull we are able to include here a valuable description of the histology of mycosis fungoide based upon his observations on autopsies at the London Hospital

The histological changes in mycosis fungoides are those of a chronic granulomatous inflammation They are characterised by an infiltration

extreme elephantiasis. Whether the parasite causes obstruction of the lymphatics or predisposes to lymphatic inflammations of bacterial origin is uncertain. The phenomena of filarial fever point to the latter. In extreme cases ligature of the femoral artery has been practised in elephantiasis of the leg. Amputation of the enlarged scrotum or limb may be necessary. In early cases removal of the patient to a temperate climate has proved beneficial. Antimony given intravenously or intramuscularly appears to diminish the number of filariæ in the circulation, but the effect is not permanent. Intramuscular injections of "Oscol stibium," a colloidal preparation of antimony, in doses of 0.5 to 1 c.c. every second day are recommended by Anderson. Filarial fever, when due to streptococcal infections which are an important factor in elephantiasis, requires early treatment with penicillin or a sulphonamide, but these remedies have no lethal effect on the filariæ.

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process in the internal organs is essentially similar in the liver the infiltration commences in the portal spaces but by extension and confluence may involve large areas

Clinical features The disease develops insidiously In the majority of cases there is a *premycosic* stage characterised by—(1) An intense pruritus (2) a polymorphic eruption or (3) erythrodermia In rare cases the tumour formation is the first manifestation

(1) *Onset with pruritus* The itching is general and of very long duration



FIG 6— Mycosis fungoides

tion and unaccompanied by any obvious change in the skin This condition may last for several months to several years

( ) The *polymorphic eruption* may be transitory or persistent There may be a primary patch which *precedes* the generalised eruption Various types of lesion occur Sometimes they are macular or in the form of plaques of a red or purplish colour and occasionally blebs appear on them They are of varying extent and their margins are ill defined In other cases the areas are like patches of dry eczema or psoriasis slightly raised above the surface ill defined and of purplish or yellowish tinge The surface may be scaly occasionally oozing or covered with dry crusts Infiltration may be present In other cases again the lesions resemble a

with large and small lymphocytes, large mononuclear leucocytes, plasma cells and eosinophil and neutrophil leucocytes, associated with a proliferation of fibroblasts or reticulum cells, these processes leading to the formation at first of massive cellular nodules and later of scars. The basophil mononuclear cells preponderate greatly in the infiltration, but eosinophil leucocytes are usually abundant and conspicuous; mast cells are only slightly, if at all, increased in number; the fibroblasts in the early stages are spheroidal, but later become spindle shaped; there are occasionally large giant cells with numerous small oval nuclei that are usually disposed peripherally. The granulomatous nodules occur for the most part in the skin, but similar nodules may be found within the body, for instance in the mucosa of the tongue, in the myocardium and in the liver, whilst in the

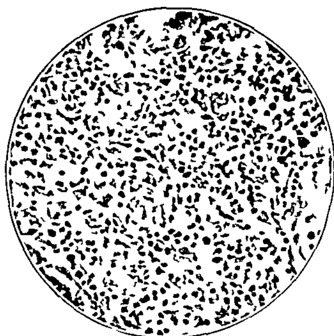


Fig. 66. Mycosis fungoides. Microphotograph of section, ⅙ obj.

lymphatic glands and spleen there is a general inflammatory infiltration of similar cytology, with or without focal areas of sclerosis.

In the skin the infiltration is perivascular and at first appears in the outer part of the reticular layer of the dermis, though the papillary layer and even the epidermis may be affected early in a few places. At this stage the papillary and subpapillary vessels are dilated and engorged. The infiltration extends downwards through the dermis round vessels and therefore round sweat ducts and coils, to involve the subcutis in places. The perivascular infiltrations by enlargement become more or less confluent. Meanwhile the papillary layer is altered by œdema, fibroblastic proliferation and less massive infiltration, and the interpapillary processes of the epidermis lengthen and broaden, whilst the intervening epidermis is thinned; the epidermis may necrose and be ulcerated, and the granuloma fungate. The collagenous and elastic fibres rapidly disappear in the early infiltration. Later the infiltrating cells decrease as fibroblastic activity increases until a dense scar tissue is formed devoid of elastic fibres. The

trated plaques of a brick red colour with the surface of the skin finely mamillated or like orange skin or there may be tumours

(3) *Erythrodermia* The initial lesions are red or violet tinted plaques chiefly in the flexures but eventually the whole of the surface may be bright red The skin is dry and there may be fine desquamation The hair may fall out all over the affected parts but the nails are not affected The itching is intense The skin later becomes œdematous and the lymphatic glands everywhere become swollen After a variable time four to ten years small nodules with characteristic structure may appear Rarely death takes place without the development of the tumours

The *tumours* appear rarely as the first symptom Where this occurs the condition is described as mycosis fungoides *a tumeurs d emblée* Usually they develop as a sequel to the pruritus or to the polymorphic eruptions or coincident with them They may be in the form of infiltrated plaques of variable size of a brick red colour with a mamillated surface or rounded tumours The mycosic tumour varies in size from a cherry to half an orange or more It may develop on one of the primary lesions or on previously healthy skin The tumours are soft of a dull red colour hemispherical or perhaps nodular on the surface They have often a narrow constriction at the base and have been likened to a tomato or mushroom on the skin There may be semicircular or crescentic lesions designated the horseshoe tumours

They often ulcerate destroying the epidermis but extend peripherally Sometimes enormous tumours are seen as big as a child s head or large ulcers form exuding a sanious discharge Gangrene is a rare sequel

Curiously the tumours may disappear spontaneously with or without scars and pigmentation

Mycosis affects the trunk the upper parts of the extremities and the face The glands are always enlarged early Alopecia of the affected parts is usual There are no characteristic blood changes

The disease may last for from two to twenty years with spontaneous remissions which simulate cure Intercurrent acute febrile illness sometimes causes disappearance of the tumours In the late stages the patient becomes asthenic his digestive organs fail and he dies in marasmus or from complications One of our patients died from pulmonary embolism

In the acute form described by Vidal and Brocq the tumours are localised to one region appear in healthy skin and the glands are not involved Brocq considers this form as closely related to the sarcomata

Diagnosis The diagnosis in the premycosic stage is often exceedingly difficult In all cases of ambiguous pruritic dermatoses which are prolonged and rebellious to treatment the possibility of the disease being the premycosic stage of mycosis fungoides should be borne in mind (Besnier) The chronicity of the disease and the characters of the plaques are suggestive but the feature upon which reliance is to be placed is the persistence of a polymorphous eruption resembling eczema lichen or psoriasis with intense itching In a large number of cases however the nature of the disease can only be suspected until the development of the tumours A biopsy may be of value When the characteristic tumours appear the diagnosis is no longer in doubt Gaucher and others have reported successful complement fixation tests in the premycosic stage

lichen They vary in number and in extent, but are always attended by intense itching

Sometimes the trunk is widely involved The face may be affected,

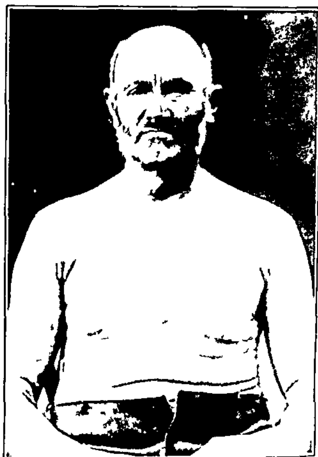


FIG 68 The same patient after treatment by X rays The tumours reappeared after several months

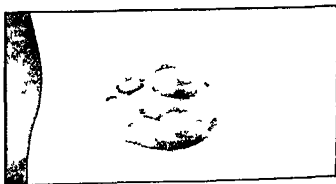


FIG 69 Mycosis fungoides A group of tumours in the back of a man aged 50

and if there is infiltration, an appearance which is leonine like nodular lepra, may be produced

Following these lesions or coincident with them there may be infil

adenique of Dubreuilh) occurs These papules consist of an inflammatory round celled infiltration round the sweat glands These papules are red or dusky in colour and are found on the trunk and limbs They come out in crops

(7) Lichenification and pyogenic infection are found as the result of the scratching

(8) Rarer skin eruptions which have been recorded are bullæ morbilliform erythema urticaria and purpura

(9) Lymphadenomatous nodules in the skin are uncommon Sir Humphry Rolleston was only able to collect twelve cases in the literature The lesions may vary from pin head sized nodules to flattened plaques Their growth is slow and the face and scalp are more often affected than the trunk In some cases nodular leprosy is closely simulated

Lymphadenoma is distinguished from leukæmia and allied conditions by the blood count

Treatment by arsenic which may be given in the form of neo salvarsan intravenously or by the mouth should be tried Some relief may be obtained by X rays

Leukæmia Cutis

The cutaneous lesions in acute leukæmia are

(1) Cutaneous tumours formed by cells similar to those found in the blood The lesions are slaty blue or plum coloured nodules or discs They are small and may be extremely numerous but rarely become confluent There is a very high white blood cell count In Dr Barber s case there were 400 000 white cells 70 per cent of primitive type small lymphocytes being only 6 per cent Green tumours occur in chloroma

(2) Polymorphic rashes sometimes called leucemides Purpura is by far the commonest eruption and the extravasations may be petechial or of large size The less frequent cutaneous manifestations are an exfoliative erythrodermia and erythemata of papular vesicular and morbilliform type *Herpes labialis* is not uncommon Pruritus is rare

Chronic Myeloid Leukæmia Leukæmic tumours or infiltrations of the skin are rare In Rolleston and Fox s case the lower part of the trunk was covered with nodules closely *resembling* in colour and size half a damson In the late stages of myeloid leukæmia *hæmorrhage* may occur The diagnosis is made by the blood count

Chronic Lymphoid Leukæmia is seen in two forms —

(1) *Tumours* True leukæmic tumours of the skin occur most commonly in the chronic lymphoid type The growths are most frequent on the face and but for their colour which is usually a livid red simulate closely the leonine facies of nodular leprosy The tumours may be miliary and are usually small In rare instances they have been distributed all over the surface There is intense pruritus and secondary eruptions due to scratching are common The patients are usually in late middle life and the disease runs a chronic course The blood shows a high leucocytosis 00 000 or more and the diagnosis is made by the differential count

(2) Other cutaneous manifestations are—generalised erythrodermia

Prognosis Until the X-ray treatment was used for this affection the prognosis was hopeless. In a number of cases the tumours and the erythroderma have been entirely removed by radiotherapy, and patients have been free from recurrence for some years. Our experience is, however, not yet sufficiently extensive to speak of cure. It must be remembered that spontaneous resolution sometimes occurs.

Treatment of mycosis fungoides In the early stages the irritation should be controlled by suitable sedatives as long as possible and a simple lotion such as 2 per cent of phenol in lotio plumbi may be applied to the itching and reddened areas of skin. Ichthyol cream is suitable when the areas become dry or scaly. When the pruritus is not controlled by this means X-ray therapy is extremely valuable. Doses of 50 to 100 *r* often relieve irritation, but should not be given too freely because after a while they become less effective.

When tumours arise doses of 200 to 400*r* through 1 mm of aluminium may be given to the circumscribed area and repeated at intervals of a week until 1,200 *r* have been given. In this way tumour formation is often greatly retarded, but eventually more active growths require dosage as for malignant lesions and ultimately this is likely to be ineffective, and the inevitable extension to the lymphatic glands and viscera terminates the disease.

Lymphadenoma, Hodgkin's Disease, Lymphogranuloma

The skin is affected in a considerable proportion of cases of lymphadenoma. Ziegler places the incidence at 25 per cent, while in Cole's series 39.3 per cent had cutaneous manifestations. The majority of the patients are young subjects, and the skin lesions are usually late in the course of the disease.

The skin changes met with in Hodgkin's disease vary from itching and pruritic eruptions, possibly of toxic origin, to actual lymphadenomatous nodules in the corium, and in the summary of these affections which follows we have drawn freely upon Sir Humphry Rolleston's admirable paper on the subject.

Skin affections in lymphadenoma

(1) *Pigmentation* which may be due to irritation of the sympathetic or pressure on the adrenal vessels by retro-peritoneal glands. It must, however, be remembered that arsenic which is commonly given in Hodgkin's disease may cause pigmentation, and X-ray pigmentation may also occur.

(2) Jaundice may be caused by pressure of enlarged glands on the bile ducts. The jaundice may be intermittent and depend on recurrent febrile attacks.

(3) Loss of hair and alterations in its colour may occur.

(4) Hyperidrosis may be associated with the febrile attacks.

(5) Pruritus may be the earliest symptom, but is often a late phenomenon. It is usually general. Pruritus may be accompanied by eosinophilia, but there is no direct correspondence in their incidence. There is some evidence pointing to the itching being due to a circulating toxin.

(6) Prurigo. An eruption of itching papules ("prurigo lymph-

adenique of Dubreuilh) occurs These papules consist of an inflammatory round celled infiltration round the sweat glands These papules are red or dusky in colour and are found on the trunk and limbs They come out in crops

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(2) Other cutaneous manifestations are—generalised erythrodermia

with infiltration of the true skin simulating pityriasis rubra and scaly erythematous patches

The pigmentation seen in these cases may be due to the administration of arsenic but may appear independently Urticarial lesions have also been described

Lymphoblastic erythrodermia Panton and Sequeira have described a series of cases which should be separated from the leukæmias proper under the name of ' Lymphoblastic Erythrodermia ' for the purpose of differentiating it from the previously described types and from mycosis fungoides (see p 275 and Plate 29)

" Lymphocytoma ' of the skin is the name applied to a rare affection in which skin coloured or reddish translucent papules and nodules arise about the face and sometimes on genitals The histological appearances are those of a lymphoid infiltration with germ centres suggesting lymph gland tissue There are no associated blood or other changes

Sarcoidosis is classed by clinicians especially physicians as a reticulo endotheliosis Its dermatological aspect is considered on p 502

Multiple Idiopathic Pigment (so-called) Sarcoma of Kaposi

Histologically and clinically this condition should, in our opinion be removed from the sarcomata It appears to be a granuloma of peculiar type The disease appears first on the hands and feet symmetrically but it may spread to adjacent parts of the limbs and become generalised In an early case recently under our observation the primary affection was a symmetrical purple congestion of the extremities on which small nodules of similar colour developed There may however be small nodules from the onset The small nodular tumours are always most numerous on the extremities There is rarely much pain and the lymphatic glands are not affected The condition may remain stationary or gradually undergo resolution More rarely the affection spreads and the lesions may ulcerate

The first case described in England was a Galician Jew who was under Dr Pringle and Sir Stephen Mackenzie and who after having a leg amputated recovered He died in the London Hospital at an advanced age from heart disease secondary to emphysema A London stonemason with severe gout was for a long time under Sequeira s observation The hands and feet were affected and the condition is shown in Plate 10 He improved gradually and has not been seen for some years A third case shown at the Royal Society of Medicine was also in a gouty patient a German aged 80 Here the affection was also on the extremities but more on one side than the other

The histology of the second case was investigated by Dr Bulloch who concluded that the lesions were inflammatory and not neoplastic Spindle cells and fibrous tissue with many dilated vessels were found The pigment was as Kaposi had described entirely due to hæmorrhages Our cases had all the features which Sir J Hutchinson described as symmetrical purple congestion of the skin and we have no doubt were of the same type Dr Turnbull who has examined two cases histologically found the earliest change to be capillary hyperplasia The pigmentation was due to multiple hæmorrhages The other changes were of an inflammatory



Multiple Idiopathic Pigment Sarcoma (so-called) of Kaposi
Showing purple colour and nodular tumours

[To face p 14

nature the infiltration consisting of fibroblasts and mononuclear cells The patients have nearly all been middle aged or elderly men but a very few cases have been described in women

The cause of the disease is unknown Two of our patients had suffered from severe gout and Hutchinson gives this as the cause of his symmetrical purple congestion Some of Kaposi's patients died with diffuse dark purplish patches widely spread on the skin and on the mucous membranes the fatal issue being attended with extreme wasting melena and hemoptysis Tumours similar to those on the skin were found post mortem in the viscera but as indicated above a prolonged course and even recovery are not uncommon That in some cases this condition may pass on to true sarcoma is exemplified by a man who had been under Sequeira's care since 191- After twelve years in which the disease followed the common course a nodular rapidly extending soft tumour developed on one leg The new development was examined microscopically and found to be round celled sarcoma The limb was amputated and later a secondary nodule above the stump has been removed

The Plate (10) illustrates the characteristic purple congestion of the extremities The affection is always bilaterally symmetrical and the thickening of the integument impedes the free movement of the fingers

The purplish red tumours are softer than the general eruption and are highly vascular We have only once seen a lesion on the mucous membranes and that occurred in a man of fifty in whom a purplish congested plaque appeared on the right side of the soft palate It caused no pain and was only found on routine examination The lesion disappeared completely as the result of X ray treatment

Treatment Arsenic in large doses should be tried Radiotherapy has proved useful in early cases

REFERENCE—W N GOLDSMITH E C WARNER A H T ROBB SMITH *Symposium on Reticuloses* 1944 *Brit Journ Derm and Syph* 56 107

GROUP 3

CONSTITUTIONAL DISORDERS

CHAPTER VII

ECZEMA POMPHOLYX

Introduction

It was suggested in the opening chapter that dermatology offered the student and practitioner a natural and valuable field for the study of medicine. To utilise this field it is essential to adopt an intelligent approach to the subject and along these lines we may resolve the apparent paradox that while dermatological medicine should be most readily comprehended it too often creates a sense of confusion.

The first point to appreciate is that as no two individuals are alike the manifestations of the same disease in different individuals will necessarily differ. At the same time just as there are essential features common to all human beings, so the essential features of particular diseases are always the same. The study of disease in the skin thus trains the student in the observation of essential fundamentals and in the proper assessment of individual and superficial variations.

The second essential to grasp is that for patient and doctor every disturbance in the health of the skin is associated with some subjective or objective manifestation. In the study of internal medicine we are in the habit of differentiating clearly between organic disease—the manifestation of which we have seen in the post mortem room and have related to clinical findings—and functional disorders such as headache, dyspepsia which are not in our minds associated with objective changes. These disorders are *of course associated with objective manifestations* could we but study the organ concerned at the time the patient suffers from the symptom but the changes are of a physiological and transitory character. In *dermatology all these physiological disturbances are manifest* to the observer and are liable to be confused with the manifestations of pathological disease. An erythroderma or eczema will pass unobserved in the *post mortem room*.

Bearing those points in mind we have endeavoured to present the subject as it illustrates the two major aspects of ill health and the following *text is arranged in two sections the first of* which deals with functional or physiological disorders—the constitutional or personal or neo Hippocratic medicine of the general text book—and the subsequent *sections deal with morbid or pathological* diseases dependent upon particular morbid processes and associated with substantial and characteristic structural changes. Some few affections are not as yet clearly *defined and overlap into both fields*.

Constitutional or endogenous medicine of the skin, as in the wider field concerns itself with the peculiarities of the individual and the *relationship and* adaptation of that individual to the particular environment in which he finds himself. It is with constitutional dermatology that we shall deal in this section.

So far as the individual is concerned it is obvious that factors of inheritance and the environmental influences of early life must play a paramount part Later in life environment must be interpreted in a very wide sense and includes climatic and physical factors clothes and toilet care diet and influences bearing upon dietetic and metabolic health home life status and economic factors nature and conditions of employment and of leisure occupation psychological influences in domestic and private life and in relation to employment and all those ties which relate the individual to society and to the state These are the concern of what is now being termed social medicine and recognised as covering the major part of general medical practice Dermatology should be based upon general medical practice in its widest sense and we must therefore give the fullest attention to this aspect of preventive and practical medicine

The three major environmental factors are the psychological nutritional and industrial factors and they constantly overlap and are closely interrelated We shall give a little attention to each

The body cannot function normally unless adequately nourished and the skin readily shows evidence of malnutrition As elaborated in a previous chapter diet is concerned first with the provision of energy producing foodstuffs—proteins carbohydrates and fats—and with certain essential food factors—vitamins minerals and salts—and deficiency in respect of any of these factors is reflected in the tone and characters of the skin and its reaction to environmental influences It must not be overlooked that though the diet provided may be adequate the foodstuffs may not be assimilated because of the manner or circumstances under which they are provided or because of disturbance in the psychological or physical health of the patient or the condition of his gastro intestinal tract and for one or more of these reasons deficiency diseases may still be manifest

Apart from the particular manifestations of malnutrition we have constantly to bear in mind the importance of this in relation to all functional activity of the skin It is therefore a common predisposing factor in the etiology of such reactions as eczema and dermatitis seborrhœic and psoriatic and other disorders of a constitutional character

The psychological background is as important as the nutritional All physiological processes are profoundly influenced by mental tone and health which readily excite or depress vitality in every organ with most widespread consequences The bearing of this upon dermatological ills is appreciated if we recall the ease with which blushing and pallor sweating and goose flesh skin etc are evoked The intimate relationship embryologically of the skin and central nervous system has previously been stressed and accounts for a high proportion of functional disturbances in dermatological practice Every dermatologist should have some training in and experience of psychological medicine if he is to interpret and assess his field of practice accurately

Again heredity and early life are important and the dermatological stigmata indicative of maladjustment in this regard are numerous The size of the family the character of the school life the influence of parents and other guardians and relatives and the conditions under which the psychological stresses and strains of puberty are experienced should receive full consideration The problems of adolescence of matrimony

and childbirth and of the climacteric in both male and female are *important* and so are the relationships of the individual to his or her work to success or failure etc

Nervous shocks worry anxiety, fatigue and nervous stress and strain are perhaps the most *common influences bearing upon mental health and* responsible for physiological disturbances of the type we are about to consider

Industry is responsible for a large group of skin diseases with particular *characters and dependent upon contact with noxious substances* These are dealt with in a separate chapter and more fully in works on occupational diseases of the skin Apart from this however the nature of a man s occupation may profoundly influence his health through the channels of nutrition and psychology *already mentioned* Thus miners may see little daylight work in a hot and abnormally dusty atmosphere and under considerable nervous strain

Industrial employees may be subject to *boredom and monotony* to fatigue and weariness from standing or strained postures Anxiety and irritation often enter into the picture from relationships with fellow workers and superiors and from fear of unemployment

Apart from irregularity of feeding the sandwich meal the effect of night shifts etc these psychological influences bear upon nutrition by their effect upon gastro intestinal function

The occupation of a patient must invariably receive consideration in taking a history and assessing the factors bearing upon the etiology of disease and the doctor should make himself familiar with his patient s employment

While the nutritional psychological and industrial are the three major *influences bearing upon the affections* dealt with in this section there are other factors which may upon occasion play a part Toxaemia arising from acute or chronic infection and sometimes from septic foci as in teeth, tonsils etc should receive consideration more particularly in the *erythematous reactions Specific allergic sensitisation* to foodstuffs plants animals toxins etc , seems to be responsible in a further limited group of reactions and especially in those associated with urticaria or œdema

The influences of endocrine and metabolic factors as in some seborrhœic disorders must also be mentioned

It should be emphasised that while any one or more of these factors may play a part in the etiology of any of the reactions to be considered in this section certain *particular influences seem commonly to bear upon* particular reactions Thus the psychological is most important in eczematous troubles the nutritional in seborrhœic toxic influences in the erythemata and climatic in psoriasis etc

ECZEMA

(Gk *ek* out *zeo* boil)

The term " eczema " is too deeply set in dermatological nomenclature to be uprooted and there is *no doubt that many dermatologists* have a clear concept of the uncomplicated condition The eczematous eruption primarily consists of grouped uniform pinhead sized lesions at first

PLATE II



CHRONIC SCALY ECZEMATOUS DERMATITIS
There had been a short vesicular stage

erythematous later papular vesicular and eventually weeping The uniformity of the eruption no doubt depends upon the fact that it arises from the papillæ in which the capillary loops dilate and exude to produce microscopical vesicles becoming apparent as weeping points after scratching Where the epidermis is thick and horny as on the hands and feet individual lesions coalesce before reaching the surface and produce larger vesico bullous lesions termed pompholyx When the eczematous eruption persists in a mild form it gives rise to a diffuse œdema of the epidermis (spongiosis) which results clinically in desquamation giving a scaly erythematous eczema If this becomes chronic or is aggravated by much scratching the œdema and hypertrophy of the epidermis which results (acanthosis) is seen clinically as a superficial leather like thickening of the skin with exaggeration of its normal lines (lichenification) The eczematous reaction depends upon a physiological hypersensitivity of the skin *i e* a predisposition inherited or acquired and upon an external agent the irritant of such an order as would not provoke inflammatory changes in the skin of the *normal* individual Auto sensitisation to the exudate or to cell products extends and maintains the reaction

Naturally the eruption commonly arises as a result of the psychological stresses and external hazards of many employments and in such cases cannot be distinguished from the group recognised as Occupational Dermatoses In fact legally such cases have to be certified as dermatitis produced by dust or liquids or the subjects are not eligible for compensation so that what is morphologically an eczematous eruption must be diagnosed as dermatitis

In the chapter dealing with inflammatory conditions of the skin resulting from external injuries it is suggested that it would be helpful to substitute the term Eczematous Dermatitis (Plate 11) in order to avoid the difficulty of trying to differentiate between eczema and dermatitis and it is fundamental to a proper concept of this condition to appreciate that its appearance in all cases is indicative of an underlying constitutional predisposition and an external irritant factor At one end of the scale we meet cases like infantile eczema where the problem is essentially a constitutional one and the external factor may be no more than friction on the part of the patient At the other end we meet cases of dermatitis in which the external factor *i e* an irritating dust or liquid is the all important factor Between these two extremes varying degrees of constitutional predisposition and external injury combine to give a wide range of disorders From this group of dermatoses we should therefore exclude as not constituting eczematous reactions —

(1) Gross traumatic dermatitis from external injury calculated to provoke inflammatory changes in the *normal* individual

(2) Certain eruptions dependent upon infections of the skin *e g* —

(i) Eczematoid ringworm of the groins and extremities (epidermophytosis etc see p 300)

(ii) Certain seborrhœic affections thought to be dependent upon the pityrosporon and therefore relatively benign skin organisms (petaloid and pityriasiform seborrhœic eruption of the trunk and limbs see p 204)

(m) *Certain* scaly red sometimes glazed intractable inflammatory infections of the scalp retro auricular and circum oral sites and flexures thought by some authorities to be dependent upon pyogenic organisms or *monilia* (*streptococcic pityriasis of Hax thausen* p 448 and infective seborrhoeic dermatitis and sycosis, p 206)

It will be convenient to consider (1) local conditions which *render the*

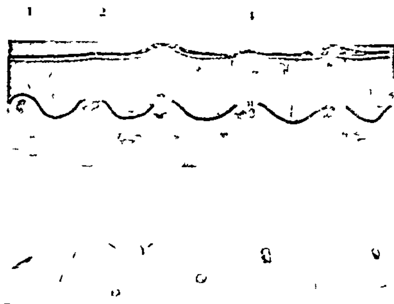


Fig 70 The stages of eczema (diagrammatic)
Stages 1 Dilatation of capillary loop in papilla of derm
2 Intercellular oedema of stratum mucosum
3 Early papule
4 Microscopical vesicle
5 Weeping point

skin unduly sensitive and (2) general conditions which predispose to or directly cause the inflammatory reaction

Local predisposing causes —

(1) Excessive dryness of the skin This is best seen in xeroderma and ichthyosis These congenital conditions especially in their milder forms are not at all uncommon They render the skin exceedingly sensitive to cold and damp and to easterly winds Xerodermatous patients usually come for treatment in the late autumn and winter months and often year after year The dry atrophic skin of the aged is also specially prone to eczema

(2) Excessive sweating of the hands and feet and in the flexures is a common cause of eczema Included in the eczema group is the vesicular affection of the hands and feet called dysidrosis or pompholyx This *eruption is recurrent and occurs chiefly in the summer*

(3) Excessive greasiness of the skin as in the seborrhoeic subject predisposes to eczema It is commonly associated with hyperidrosis and such patients are recognised as bad industrial risks in those trades carrying with them a dermatological hazard

(4) Chronic congestion as seen in the legs of patients suffering from varicose veins, is a common condition predisposing to eczema

(5) Erniosis the chilblain type of circulation associated as it is with some chronic non pitting œdema of the extremities and hyperidrosis renders the subject more liable to eczema

It will be appreciated that occupations which cause excessive drying or degreasing or water maceration of the skin favour the development of eczematous lesions

General predisposing conditions —

(1) Heredity very definitely plays a part Not only is it common to get a family history of eczema but other evidences of physiological instability in the family such as hay fever asthma rosacea urticaria etc are the rule French authorities support the view of an inherited exudative diathesis being responsible for eczema

(2) Age and sex are important factors eczema being common in the infant and in the aged In infancy eczema is more common in the male than in the female

Puberty and the menopause phases of marked physiological instability are also times of increased susceptibility to eczema

(3) General debility Physical nutritional and nervous debility are regularly present in these cases indeed it is not too much to say that the majority of cases of eczema are no more and no less than an expression of debility General fatigue over work worry anxiety and unhappiness are among the most common findings but poor or improper or irregular food often deficient in vitamins resulting in dyspepsia minor degrees of avitaminosis and anæmia are also important As major associated symptoms it is quite common to find insomnia hypertension or anæmia

(4) Diet Gross indiscretions in diet dyspepsia and constipation will undoubtedly aggravate but it is very doubtful if they are ever primarily responsible for eczema On the other hand, considerable help in treatment is afforded by proper dietetic instructions though it is important to prevent the patient from becoming anxious and imaginative about the relationship of special foodstuffs to the eczema This is dealt with later under treatment

While our clinical experience has not supported the view that eczema results from autointoxication consequent upon constipation or as the result of toxæmia from focal sepsis it is desirable that such disorders should be corrected and it is possible that they may on occasion be of major importance

Skin Tests Certain subjects give specific reactions to cutaneous protein tests and extensive observations have been made to determine whether eczema is due to a sensitisation of the skin by certain foods The results recorded vary widely Many individuals react to several proteins Our experience with that of others is that even when a protein reaction is obtained it is quite uncertain whether the removal of the incriminated article will be followed by amelioration of the eczema The practical value of these tests therefore is limited With the exception of pompholyx from oranges we believe that eczema infantile or otherwise is rarely dependent upon specific sensitiveness to any ingested food We have seen many cases declared proven by the allergists but their conclusions have been refuted by clinical investigation and treatment subsequently

(iii) Certain scaly red sometimes glazed intractable inflammatory infections of the scalp retro auricular and circum oral sites and flexures thought by some authorities to be dependent upon pyogenic organisms or monilia (streptococcic pityriasis of Hax thausen p 448 and infective seborrhoeic dermatitis and sycosis p 206)

It will be convenient to consider (1) local conditions which render the

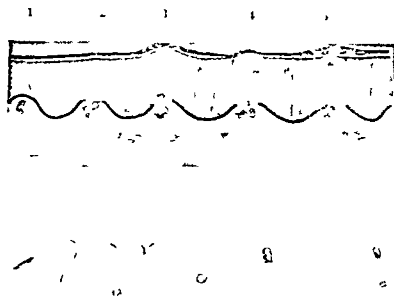


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the presence of imperfectly keratinized horn cells which retain their nuclei (parakeratosis) and adhere to the surface instead of being shed causing the scales in squamous eczema The clinical change is lichenisation or lichenification which may appear in papular form prurigo (Lat from *prurire* to itch) where the eczema papules measure the size of a split pea or appear as plaques or sheets of thickened leathery skin in which the normal lines of the skin are exaggerated and appear as furrows



Fig 72 Eczema (flexural type)

Clinical features It has long been the practice to classify the types of eruption in eczema as erythematous papular vesicular and pustular It is impossible to make this distinction arbitrary as the various stages may co exist or the process may undergo modifications from time to time The terms are however useful as expressing the chief characters



Fig 73 Infantile eczema (facial type) infected

In **erythematous eczema** the lesions are ill defined bright or dull red spots or patches which unite to form diffuse areas There is usually little œdema except in those sites where the connective tissue is lax as about the eyelids or the scrotum and penis The patient complains of heat and itching but there is no pyrexia or disturbance of the general health as in erysipelas The eruption gradually fades and is followed by a slight usually branny desquamation Erythematous eczema is very prone to recur and is often mistaken for erysipelas It generally runs an acute course but may pass into the vesicular or scaly form Occasionally it becomes pustular

Pathological anatomy The essential part of the process is a spongy condition of the stratum mucosum due to intercellular œdema arising from the capillaries in the papillary heads (Fig 71) As soon as the tension of the serous exudate is sufficient to rupture the intercellular filaments vesicles form containing sero fibrinous fluid and a few migratory cells The vesicles appear first in the deep part of the epidermis and gradually pass up to the corneous layer where they form the visible vesicles characteristic of one stage of the disease The after history of the vesicle varies Where the tension is slight the vesicle dries up and a minute crust or scale forms which ultimately falls off and the epidermis is soon restored But in many instances the vesicles rupture or are ruptured and from the well like cavities produced the exudation continues to pour out This constitutes the condition known as "weeping" Owing to some

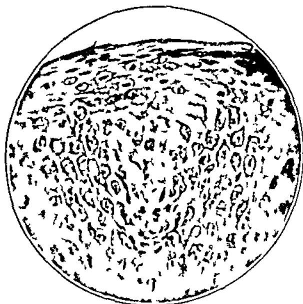


Fig 71 Early stage of eczema Negative of section kindly lent by Dr Whitfield

defect in the process of keratinisation there is no tendency to rapid healing

In true eczema the vesicles are anærobic at the start but they speedily become infected with micrococci which find the serous exudate a suitable *culture ground* When pyogenic infection occurs leucocytic infiltration rapidly follows The secretion then becomes turbid and purulent and the crusts which form by its desiccation are yellowish and comparatively thick

The eczema is then "impetiginised"

Defective keratinisation of the epidermis is another feature of eczema It has already been mentioned as preventing the healing of weeping surfaces But the special change called parakeratosis (Gk *para* irregular *keras atos* horn) in which the cells of the corneous layer preserve their nuclei is the cause of the desquamation in scaly eczema In chronic cases the œdema of the prickle cell layer gives rise to cell reproduction above the basal cell layer *i e* mitosis occurs in the prickle cells This œdema and hypertrophy acanthosis (Gk *akanthos* thorn or prickle) is responsible for

the presence of imperfectly keratinized horn cells which retain their nuclei (parakeratosis) and adhere to the surface instead of being shed causing the scales in squamous eczema The clinical change is lichenisation or lichenification which may appear in papular form prurigo (Lat from *prurire* to itch) where the eczema papules measure the size of a split pea or appear as plaques or sheets of thickened leathery skin in which the normal lines of the skin are exaggerated and appear as furrows



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Papular eczema The lesions are round, often acuminate papules of a bright red colour about the size of a pin's head. In some cases the papule is capped by a tiny vesicle visible only under a lens. The papules may be discrete, or arranged in groups forming patches of various sizes. When the lesions are closely set, plaques may be formed which in chronic cases undergo lichenisation. This variety of eczema is attended with intense itching and the clinical features are often masked by the excoriations caused by scratching. It frequently runs a chronic course and is rebellious to treatment.

Vesicular eczema Usually begins acutely. The skin shows a punctate

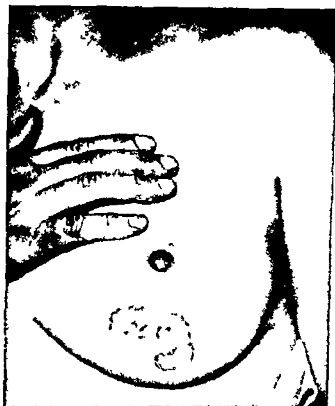


Fig. 74 Vesicular eczema Circinate pattern

erythema and a number of minute vesicles not larger than a pin's head appear. The closely set vesicles soon coalesce to form larger lesions which rupture and a viscid serous fluid which stiffens linen escapes from a number of depressions which are the ruptured vesicles. The exudate dries up to form yellowish scabs or crusts and under these the exudation continues. The itching and burning diminish when vesication occurs. Patches are ill defined except when circinate in pattern.

Vesicular eczema may occur on any part of the body. In infants the areas affected are mask like, the cheeks, forehead and chin being specially involved. The hands and feet and the flexures are common sites in the adult. The itching and burning sensations lead to *excoriation from* scratching and in young children it is not uncommon to find extensive bleeding areas which have been *denuded by the nails (Fig. 74)*

On the legs chronic vesicular eczema passes into eczema rubrum and infection with pyogenic cocci commonly leads to the pustular variety

On the hands and feet a vesicular eruption between fingers and toes on palms and soles is described as *pompholyx* It is intensely irritable usually associated with increased sweating is common in hot weather and often nervous in origin though it may arise as a toxic eczematide eruption or from external irritants

Impetiginised eczema Secondary infection with pyogenic cocci produces the condition which has been termed 'pustular eczema' The most frequent sufferers are children particularly those seen in the out patients clinics in large towns The pustules form dirty yellow brown or greenish brown crusts The hairy regions of the body are the most frequent sites The glands are involved early

Eczema rubrum is an old name given to chronic red glazed inflammatory areas on the lower extremities in adults The affected part is of a bright red colour the skin is thickened and the whole limb is often swollen The corneous layer of the epidermis is absent and the exudation may be either diffuse and hardly perceptible or clear yellow drops of plasma oozing out at various points Scabs and crusts of yellow colour are formed by the drying exudate Sometimes blood is mixed with the plasma The patients complain of severe burning and itching

Eczema madidans is the name given to constantly *oozing red eczema*

Scaly eczema This name is given to the scaly condition which follows the erythematous or vesicular eruption It is also applied to a chronic form in which erythema with scaling is the chief feature The scales are thin flakes of a white or grey colour They differ from the scales of psoriasis in being easily detached and moreover they are scanty and never silvery

The most advanced degree of scaly eczema is seen on the palms and especially the soles Here the increase of the horny layer is so great that the mobility of the parts is impeded The surface is dry and rough and movement causes the formation of deep painful fissures in the sites of the normal furrows of the skin

Infantile eczema begins over the malar regions and extends to a mask distribution over the face The scalp and outer aspects of the limbs may be affected but flexual lesions are usual in chronic cases The distribution and extent are determined by friction and scratching It is more common in males and usually appears at about three months of age The feeding of the babe rarely plays any part in the etiology

The affliction is the expression of a sensitive skin and of a sensitive and therefore bright lively intelligent and alert child who is likely to outstrip his fellows in the battle of life provided he is not hampered by disabilities resulting from such reactions as the eczema

The eczema may be started from external irritation or exposure (as shown by Hall) or infection as *impetigo* or it may arise from some general internal upset and particularly from teething Once started the itching provokes severe rubbing and scratching and the habit is difficult to break Furthermore any little upset or annoyance any departure from routine or any stimulus is likely to evoke a reaction of the same pattern once it has been learnt

The problem is essentially a physiological and psychological one from the start and the guardians of the child should be instructed in the absolute necessity of keeping the child as peaceful and quiet as possible. It is equally important that in later childhood a quiet rather than a stimulating routine should be enjoined and undue pressure at school must be avoided.

Reference.—Barbara Woodhead: The Psychological Aspect of Allergic Skin Reactions in Childhood. 1946. *Arch. Dis. in Childhood*, 21, 98.

Occasionally this same problem arises for the first time at puberty or later in life at some crisis instead of in infancy.

Many authorities believe this trouble to be *dependent upon allergic* sensitiveness to foodstuffs or other substances, but we cannot at all subscribe to this and invariably put these babes on the ordinary diet for infants of their age. Sometimes it is advisable to remove the babe from the breast because the less intimate the relationship between the infant and his anxious mother the better. Positive skin test reactions to cow's milk, egg white and such like are often obtained, but they seem to have no significance.

Approached along these lines, with proper co-operation from those caring for the babe, results of treatment are good. It is very important that recovery should be effected quickly, for the longer the habit persists the more difficult it is to break.

Some of these infants persist with chronic eczema in the form of Besnier's or Hebra's prurigo mentioned below.

Lichenified eczema from the etiological point of view is essentially constitutional and dependent on physiological and psychological instability. It may occur extensively as sheets or plaques of lichenification verging into simple eczema or normal skin, or it may occur in circumscribed areas (lichen simplex chronicus of Vidal, also described as circumscribed prurigo, *neurodermatitis or neurodermite*). As has been described, the whole skin is thickened and leathery and the normal lines of the skin are exaggerated into furrows. The diffuse type is common in chronic eczema persisting from infancy or puberty and is known either as *Besnier's prurigo* or *Hebra's prurigo*. In the former, which is commonly associated with asthma, lichenification is mostly *flexural*, in the Hebra type mostly *extensor and in both* types outlying papules of lichenified skin the size of a pea (prurigo nodules) occur. They are very intractable, are associated with much nervous and *mental* instability and in the Besnier type are often associated with specific *allergic* sensitiveness to many allergens causing urticaria, asthma, etc. The circumscribed *neurodermite* lesions commonly occur at *the nape or* lower sides of the neck, flexures, perineum, inner thighs, or about the ankles, elbows, knees, palms and soles.

Diagnosis. The diagnosis of eczema is suggested first by itching and secondly by the characters of the eruption. The primary eruption presents grouped *uniform* pin-head sized lesions—erythematous, papular or vesicular—except on the hands and feet where coalescence of individual lesions produces *the condition of pompholyx*. Later this may give rise to scaling areas or to sticky weeping patches which form thin yellow scabs.

Lichenification—a diffuse leathery thickening of the skin with exaggeration of the normal lines—may also appear

While both weeping and lichenified reactions may occur in the same individual it is common to find one patient reacts always by the one or other type as though he were predisposed either to the wet or dry pattern of reaction and this may be an explanation of the old classification of eczema into wet and dry types

It is necessary to take a careful *history* making special enquiry as to heredity the association of such conditions as asthma hay fever urticaria etc demanding scrutiny The next point is to determine if possible for it may be very difficult whether the eruption may be due to one or more of the many irritants discussed in Chapter XVII Not only is it necessary to get information as to the exact nature of the patient s occupation but as to his hobbies such as gardening photography etc

Differential diagnosis Acute erythematous eczema—*especially that* type of contact dermatitis arising from specific sensitisation to some external agent—is often confused with *Erysipelas* Actually there is no fever or severe general disturbance and the itching is intense in eczema The acute diffuse manner in which the eruption arises is also unlike the course of erysipelas

In considering differential diagnosis we may first take those affections in which itching is a presenting symptom and we find there are very few common affections of which this is true

(1) *Itching eruptions* First come parasites and particularly *scabies* This should be the first thought with any itching affection and it is readily excluded by the characteristic sites of the discrete papular or vesicular or burrow lesions of scabies Lesions between the fingers about the axillary folds and genitals are most helpful

Second *in this group* are the toxic affections chiefly *urticaria* but the *presence* or history of wheals quickly establishes that diagnosis

Thirdly *lichen planus* may be but is not invariably a markedly itching eruption It may be impossible to differentiate between diffuse plaques of lichenified eczema (circumscribed prurigo or *neurodermatitis* or nevrodermite) and sheets of *lichen planus* The ordinary eruption of lichen planus *however* is distinctive in its violaceous colour its flat topped burnished shining papules and in the frequent presence of lichen planus on the buccal mucous *membrane*

Lastly acute vesicular eczema may especially *if* patchy suggest *dermatitis herpetiformis* at first sight The long history with recurrences the herpetic grouping of lesions the *presence of* other manifestations especially urticaria the characteristics of the vesicles the relief effected by their rupture and the high percentage of eosinophils *in their fluid* are some of the points which will help to confirm the diagnosis of dermatitis herpetiformis

( ) *Scaly and scabbed eruption* constitute the second group to be differentiated from eczema *Seborrhoeic* pityriasis of the trunk and limbs tends to affect the mid-chest and back and the flexures and may be associated with a scurfy scalp It may spread round the lines of the ribs to the flanks and individual patches may closely resemble a patchy scaly eczema The latter is generally much more irritable and primary eczematous lesions may be found elsewhere

Seborrhoeic pityriasis tends to have a more greasy scale and is relieved by mild sulphur ointments

In *eczematoid ringworm* the lesions are, as a rule, sharply defined but the simulation is very close. Chronic recurrent eruptions of this type occur in the groin and axilla and between the toes. Search should be made for fungus in all doubtful cases (see p 399). Itching may be present and is often severe

Psoriasis is rarely to be confused with eczema because of the characteristic silvery scale colour, definition and distribution of the affection. Itching is not common

Mycosis fungoides often presents an itching eruption which appears to be compounded from the lesions of eczema and psoriasis. However the disease is too rare to cause much difficulty (see p 135)

Impetigo—except a fine phlyctenular impetigo of the face—presents larger varying sized lesions, irregularly disposed with "stuck on" scabs. Itching is absent or negligible

(3) *Eczematous eruptions of the hands and feet* assume a variety of patterns. The type described as pompholyx—showing fine "sago grain" deep seated vesicles along the sides of fingers and toes and in the palms and soles with occasional coalescence of lesions to give irregularly sized vesicles and bullae—is generally a constitutional affection. It occurs in nervous subjects showing hyperidrosis and is common in hot weather and in states of debility. It is sometimes provoked by external irritants but this generally gives a more superficial diffuse and larger vesico bullous eruption with eczema of the backs of the fingers and hands and elsewhere

A vesicular toxic *erythema multiforme* occasionally affects the hands and feet profusely giving a pompholyx type of eruption. Target lesions elsewhere and lesions about the lips and mouth will often be present

Scabies affects the palms and soles more particularly in infants. The lesions characteristically lie in the lines of the palms (p 359)

In ringworm of the feet the acute manifestation is a vesicular eruption and the fungus may be demonstrable in the epidermis forming the roof of a vesicle. In the chronic form the skin in the outer cleft between the little toe and the next is thickened and sodden and tends to crack and itch. Fungus can be demonstrated in scrapings from this site

Distant foci of infection including chronic ringworm infection of the toes (epidermophytosis) may give an allergic eczematide of the hands of the pompholyx pattern. This is one important reason why an examination of the feet should never be omitted in eruptions of the hands

Papular and dry scaly and fissured eczema of hands and feet may result both from internal and external causes though there is generally some nervous constitutional background. They are often obstinate recurrent and very irritable affections and are common in both men and women about the forties and fifties. Sometimes the horny overgrowth and fissuring is extreme and most disabling and it is not uncommon to find associated hypertension and insomnia in these cases

This state has to be differentiated from tertiary lues (which commonly affects one palm or one sole only) and from psoriasis, lichen planus, lichen simplex and arsenical keratosis (generally associated with embedded warts)

Prognosis As a rule eczema may be looked upon as curable but it is often exceedingly tedious and tries the patience of the sufferer and the medical attendant Where the underlying cause can be attacked and removed the outlook is favourable but in all cases there is a great tendency to recurrence A great deal depends upon the co operation and under standing of the patient who ultimately must cure himself if he is to be cured

Sudden death may occur in eczematous infants without adequate cause the post mortem findings usually being a mild bronchopneumonia or gastroenteritis Owing to the greater risk of infection in hospital the admission of such cases should not be encouraged

Treatment of eczema and eczematous dermatitis *Prophylaxis* Certain local conditions are known to predispose to eczema Attention to these may prevent an outbreak For instance the xerodermatous skin can be kept supple and in a less vulnerable condition by the daily application of glycerine and water The more severe forms of ichthyosis usually require an oily preparation and we have used with advantage liquid paraffin or vaseline or equal parts of olive oil and lanolin Persons who are sus ceptible to chapping should be very careful thoroughly to dry the hands and especially the wrists after washing and the commonly used glycerine is distinctly prophylactic Where constant washing is necessary from the avocation of the patient equal parts of glycerine and lotio rubra make a suitable application The use of barrier creams to protect the skin from irritation from frequent washing or irritants will be mentioned under industrial dermatitis (p 351)

In certain subjects soap should be sparingly used and the super fatted basic soaps will b found of great service In some individuals soap has to be forbidden at least for a time and fine oatmeal is a valuable substi tute Hard water is also to be avoided by those who are prone to eczema.

Varicose veins must receive attention The limbs should be supported by a properly fitting bandage General maintenance of good physical and nervous health avoidance of dietetic indiscretions of undue fatigue excitement worry etc are important in view of the high incidence of eczema in states of debility

In a declared case the affected part should if possible be placed at rest A case of widely spread eczema should be treated in bed This not only allows of satisfactory dressing of the lesions but ensures rest Every source of irritation must of course be removed The affected parts may be cleansed with saline and soap may be applied sparingly to them In some cases sterilised olive oil may be used as a means of cleansing as a temporary expedient

Diet The diet in eczema should be simple In acute widespread cases it is often helpful to put the patient on a diet consisting of milk In the more chronic and localised cases more latitude is allowable All twice cooked meat entrées and made up dishes should be avoided and condi ments spices curries and fried foods should be stopped entirely Salted meats and fish should not be taken but fresh fish may be allowed Alcohol should be excluded in all acute cases but the chronic conditions are not adversely influenced by weak alcoholic drinks If there be glycosuria Bright s disease or gout the diet appropriate to these conditions must be

rigorously enforced In acute exudative cases *a higher protein diet* is of value Meat fish fowl and eggs and fresh foodstuffs generally are allowed carbohydrates and fats are restricted and fluids reduced to about two pints daily salt is avoided

This diet is supported by vitamins and the administration of a mixed *mineral mixture as the following* the effect of this *régime* being to reduce the water content of the tissues and thus renders them less catarrhal and reactive —

R Potass bicarb
Potass citrat, aa grs xxx
Calc lactat
Magnes carb aa grs x
Syr *aurant* ℳ xxx
Aq chlorof ad oz ½ t d s a c
Ft mist

A watch must always be kept for states of anaemia and malnutrition which must be treated along the recognised lines

While on the subject of diet the general care of the bowels should be stressed It is as harmful to purge unduly as it is to allow constipation *A routine in the adult of calomel gr ¼ or less at night and a little saline* aperient in the morning is wise in children hydrarg cum creta or a rhubarb and soda mixture serves the same purpose

Internal treatment There is no specific internal measure for eczema but it is essential first that the itching be relieved secondly that the whole *constitution and the skin be rested and thirdly that the patient* should sleep

All these ends are achieved by the administration not of sedatives as such but of sedative tonic measures The mental effect is of first importance and the mere doping of a patient though it may produce a few *hours sleep will effect no refreshment mentally or temperamentally and* is very likely to impair vital processes of repair and healing It is our experience that if a patient is conscious of a soporific effect from measures of this type the dosage of sedative is too great and the result will be unsatisfactory—*the effective dosage to relieve itching and improve tone is* below the sedative dosage

The necessary dosage is less in the more intelligent and sensitive than in the less sensitive The most valuable measures are phenobarbitone gr ¼ o n or b d or t d s or either of the following mixtures —

R Pot brom gr x
Sp ammon arom ℳ xx
Tr nucis vom ℳ ix
Infus gent ad oz ½
Ft mist

or

R Quin sulph gr ii
Ac hydrobrom dil ℳ xxx
Glycerin ℳ x
Aq chlorof ad oz ½
Ft mist

Sedatives should not be given merely at night but if the patient does not rest adequately on these measures then aspirin gr x or an extra gr ¼ of phenobarbitone may be given Eczema assumes abnormal proportions in the still of the night *if the patient is sleepless and in very difficult cases* full doses of morphia and scopolamine may be employed A valuable effect *of treatment* along sedative tonic lines if the proper assessment of the

problem and approach to the patient has been made is the re establishment of confidence in the patient

In infants and children the dose of bromide or luminal necessary is relatively much larger Less than gr v of potassium bromide t d s should never be given to an infant with infantile eczema no matter how young Apart from being useless small doses of bromide are liable to produce bromide granulomata The bromide may be given in a mixture thus —

R Pot brom gr v
Pot cit gr vii
Syr rhei ℳ xv
Syr aurant ℳ xxx
Aq chlorof ad dr ii t d s p c
Ft mist

We have not found phenobarbitone so valuable in infants as in older children and adults Less than gr ¼ is of no value in children with eczema and bromide or syrup of chloral is more effective

It is often advisable in dealing with chronic cases both in children and adults to continue phenobarbitone gr ¼ at night for some months after the affection has cleared

Arsenic antimony quinine or valerian as such have *not in our hands been of great value* Sometimes tr belladonnae may advantageously be added to the sedative mixtures and a combination of phenobarbitone atropine and ergot (bellergal) has a useful synergic effect in some obstinate cases The essential requirement is a sedative specific to the vegetative nervous system

Spas In chronic cases in the well to do one is often asked as to the advisability of visiting some spa The most important part of the spa treatment is the regular living and the general routine These are doubtless of more importance than the actual taking of certain waters In the overfed and constipated the regular *aperients taken* in the waters are of great value and many *persons find benefit from the* sulphur waters of Harrogate Strathpeffer and Llandrindod In other cases the alkaline waters of Royat and Vichy are of *more benefit* As a rule cases of eczema do not do well at the seaside *but where the* underlying cause is overwork and want of rest the tonic effects of the sea air are beneficial

Local treatment The local treatment of eczema and of dermatitis due to irritants is *on the same lines* It is *of course* essential that the irritant if known should be removed Where the patient s work is the exciting cause he must be removed from it if possible

Local treatment should be soothing *and* protective Too much emphasis has in the past been laid on the necessity for cleaning up affected parts and removing *infection* Most infection is saprophytic and most crusts are removed by Lassar s paste

In severe cases removal of scabs and crusts is best effected by means of the boric starch poultice One teaspoonful of boric acid and half an ounce of starch are mixed into a paste with a *small quantity* of cold water Upon this is poured 1½ ozs of boiling water and the whole is well stirred The application is spread upon butter *muslin* and applied *cool* to the affected part It is best to keep the *muslin* in position by a thin bandage The poultice softens the crusts and permits of their easy *removal* Poultices

here very small doses often help. A fractional dose 70 r to 150 r is given on three or four occasions at intervals of two to three weeks. It is most effective in relieving irritation and promoting healing.

For *chronic eczema with painful fissures* daily painting with a solution of silver nitrate ten to twenty grains in seven drachms of spiritus aetheris nitrosi and one drachm of water is often valuable. The edges of the painful fissures of the finger tips are frequently thickened and horny. This type of eczema and chronic circumscribed patches of lichenified eczema (lichen simplex chronicus or neurodermite) are greatly helped by X-ray therapy but will also respond frequently to painting with crude coal tar. Should the patient be obliged to work the finger tips should be protected by strips of Mead's strapping applied to form a cap or by filling cracks with Durafix.

In some cases patches of eczema of the chronic type cannot be influenced by the soothing remedies above mentioned. There may be some underlying general or more probably some local condition which has been overlooked. Varicose veins especially of the finer variety, where there are numerous small varices, require attention.

Pompholyx

(Gk. a bubble)

An acute or subacute eruption of vesicles or bullæ occurring on the hands (cheiropompholyx) and feet (podopompholyx) and often associated with excessive sweating. Since the vesicles are not histologically related to the sweat ducts the conditions mentioned are not the result of dysidrosis.

Etiology. The pompholyx type of cutaneous reaction occurs in the following circumstances:—

(1) From fungus infection—Eczematoid ringworm of the extremities (p. 399) and the vesicular "ide" eruptions.

(2) From chemical irritants (p. 319).

(3) Idiopathically. A neurogenic vesicular eczema of the hands and feet. The term cheiro or podopompholyx should be reserved for this idiopathic type. The hyperidrosis is merely a sign of the neurogenic basis of the condition and any eczematous reaction is more likely to erupt on a hot sweaty skin.

(4) In toxic states associated with acute febrile illnesses, tonsillitis or influenza.

(5) Rarely by the exhibition of drugs, *e.g.* iodide.

The disease is more common in women than in men. It often begins about puberty or early adult life. It is generally said that the patients are neurotic and overworked. In a few instances local irritation appears to be the exciting cause, for instance the use of antiseptics by medical men and nurses. Spring and summer are the seasons in which pompholyx occurs, and it often returns year by year about the same time. Siccole made 200 cultures from 27 cases of pompholyx with negative results.

Pathology. The lesions are rounded cavities in the corpus mucosum produced in a similar manner to the vesicles of eczema, *i.e.* by spongiosis. They do not arise from the sweat ducts and their contents are clear fluid highly albuminous with migratory cells. There is little doubt that pompholyx is a form of eczema with peculiar local characters. As already

indicated some local irritants in predisposed subjects produce a condition identical with pompholyx and recent observations have shown that at a certain stage eczematoid ringworm of the extremities may produce a clinical picture which is identical with pompholyx with its peculiar tendency to recurrence in certain seasons This eruption is usually an epidermophytide and unlike true cheiropompholyx it clears up spontaneously when the ringworm infection is eradicated

Clinical features There are sometimes general symptoms which seem



Fig. 7a Pompholyx

far out of proportion to the local character of the eruption The patient complains of malaise depression and sensations of heat and cold These symptoms and burning and itching and sometimes actual pain in the hands usually precede the cutaneous manifestation The lesions themselves are small deeply placed vesicles in groups or lines in the interdigital spaces along the sides of the fingers and on the palms rarely on the backs of the fingers They have been likened to boiled sago grains embedded in the skin and the simile is an apt one On the palms there is often excessive sweating but this is by no means constant Very often the vesicles in the palms are so deep that they merely produce flat elevations of the surface which do not obviously contain fluid In many cases the vesicles along the sides of the fingers and in the clefts and elsewhere tend

to coalesce and form definite blebs. There is no tendency for the blebs and vesicles to rupture, but when pricked they exude a clear alkaline fluid. In ten to fourteen days they dry up and desquamation occurs. Relapses are very common. The feet are often similarly involved or may be affected alone, *i.e.* podopompholyx. The eczematous eruption may spread to the forearms and appear on the trunk. When the eruption spreads to the forearms the lesions are those of a vesicular eczema which confirms our etiological concept of pompholyx. Eczematous lesions may also appear on the body and lower limbs. Impetiginisation of the lesions from scratching is not uncommon and acute pyogenic infection with ascending lymphangitis fever and malaise may occur but will usually quickly respond to moderate doses of sulphonamides.

Diagnosis. The lesions in the interdigital clefts may be mistaken for scabies, but there are no burrows, and the eruption is usually limited. Care must be taken to eliminate the eczematoid ringworms which occur on the hands and feet. In practice this may be far from easy and it may be necessary to make many examinations to be certain that the condition is not caused by fungus. Whether the similar eruption occurring from local irritation should be classed as pompholyx or eczematous dermatitis is a matter of little diagnostic import.

Treatment. As in other eczematous conditions sedatives and emollients are indicated. Small doses of phenobarbitone are invaluable or tr. belladonnae ♏v–x in a bromide mixture may be tried. At the same time the temperamental make up of the patient and environmental factors at home and at work should be considered and adjusted if possible.

X-ray therapy, doses of 50–100r repeated in two to three weeks, for a total irradiation not exceeding 300r, is most useful.

Bland lotions of lead, calamine, tar solution and the dyes should be tried first, proceeding to emollient creams if the skin is too dry. An acid lotion containing boric acid gr. 5, tannic acid gr. 20, in water to one ounce has proved useful when hyperidrosis was present.

CHAPTER VIII

NEURODERMATOSES

PRURITUS AND PRURIGO LICHEN SIMPLEX

(Lat *prurire* to itch)

Itching is excited in everyone by some forms of irritation but the intensity of the subjective phenomena varies a great deal in different subjects What would excite an uncontrollable desire to scratch in one person causes very little discomfort in another Use dulls the sensibility and may explain the tolerance of the tramp to animal parasites a tolerance which is inconceivable to a person of cleanly habits On the other hand some persons are morbidly sensitive and suggestion even the thought of one of the common parasites is followed by a sensation of itching In practice it is not uncommon to meet with an actual obsession a parasitophobia

Contact with the hairs of the stinging nettle or hairy caterpillars the peregrinations and bites of the flea louse or bug and the presence of the acarus scabiei in burrows in the skin all cause intense itching In these cases the pruritus may be looked upon as physiological scratching being the natural defence of the organism against intruders

Mellanby s observations suggest that in the case of scabies itching is the result of a specific sensitisation to the saliva or some product of the acarus and this is undoubtedly so in the reaction of the skin to the bites of the bed bug louse midge and mosquito Individual sensitivity to such bites varies greatly and when a high degree of immunity is acquired further bites may not give rise to itching and this is probably the true explanation of the tolerance to parasites above mentioned

In many healthy persons exposure of the skin to the air especially if the parts have been compressed by the corset garters etc may cause evanescent pruritus

Itching again is a frequent symptom of certain cutaneous diseases and may precede or accompany obvious changes in the integument It is most common in eczema urticaria lichen planus pityriasis rosea dermatitis herpetiformis mycosis fungoides and leukæmic eruptions and in some drug rashes

The act of scratching itself may induce pruritus in the area scratched or in some distant part and it may be difficult to determine how far the itching is primary or secondary

Pruritus

The name pruritus is given to itching which is not accompanied by any obvious changes in or disease of the skin other than those changes provoked by rubbing or scratching It may be local or general

Etiology Pruritus is most common between the ages of thirty and forty but may occur at any age both sexes are equally affected There is often a history of neuroses of other kinds in the family and some races

are more affected than others. Pruritus is very common in the United States, and among the Jews.

Predisposing causes. Some cases appear to depend upon seasonal variations and upon climate. The subjects of pruritus are often worried, anxious, overworked or melancholic—the type of 'neurotic' met with in our large cities. In other cases the predisposing cause is obesity, excess of nitrogenous food, or the abuse of alcohol, tea, coffee, or drugs such as cocaine and morphia.

The circulation of toxic bodies in the blood may cause pruritus. It is a common feature in gout, *jaundice, and some forms of uræmia, and may* be associated with glycosuria, dyspepsia and constipation. Pregnancy and uterine *and ovarian disease are sometimes accompanied by local or general* pruritus, and the phenomenon may be toxic or reflex. Leukæmia and *similar grave blood* diseases may be accompanied by intense pruritus. Itching is also met with in Graves' disease.

Itching is also an occasional symptom of organic disease of the nervous system, *e.g.* tabes, general paralysis, hemiplegia and cerebral tumour.

Exciting causes. Nearly all forms of pruritus are made worse and some are distinctly excited by exposure of the skin to the air, by changes of temperature, and hot or cold baths. In all cases pruritus is apt to be accentuated by stimulants such as strong tea, coffee, and spirits, or highly seasoned foods which tend to cause some dilatation of the peripheral vessels and may aggravate attacks. Certain drugs such as cocaine and morphia are known to give rise to intense pruritus. In others certain *articles of diet, shell fish, condiments, spices, even cheese are the* excitants. But in many of the most intractable cases no exciting cause can be traced *and the attack may waken the sufferer from an apparently* sound sleep.

Symptoms. Pruritus is essentially subjective, and examination reveals nothing but the evidence of scratching. *In a characteristic case of the* severe type the patient is seized with an intense desire to scratch. He may make heroic endeavours to control this desire, but usually without success. Pressure, friction, or the application of heat or cold may be tried with little or no relief, and finally the sufferer gives way and tears and mutilates the itching areas of skin with his nails. In a few cases an attempt is made to dig out the offending spots; we have seen this most marked in the pruritus of leukæmia, but it is not confined to this condition.

The excoriations produced by scratching are usually linear, but punctate lesions are not uncommon. Infection of the scratch lesions by pus cocci leads to impetigo and enlargement of the neighbouring lymphatic glands. In chronic cases an eczematous dermatitis is produced, or the parts may undergo lichenification.

An attack of pruritus may last from a few minutes to several hours, and there is a tendency for the itching to return exactly in the same position *after an interval.*

Generalised Pruritus

Where the itching is general, the first essential in practice is to exclude the presence of *parasites and careful examination* should be made for scabies and pediculosis. Secondly, consider and inquire about urticaria, for the patient may not present *wheals on examination.* Next it is important to

inquire as to constipation and dyspepsia to examine the urine for albumen and sugar and to inspect the patient in a good light to avoid overlooking jaundice Hyperglycæmia without actual glycosuria has been present in some instances In the female pregnancy and ovarian disease may be the cause of the pruritus and these require careful inquiry and examination The nervous system must not be forgotten for itching is an occasional symptom of tabes general paralysis etc Mycosis fungoides must be remembered as a cause of severe and persistent itching of the skin which may long precede the evolution of the characteristic tumours The possibility of the pruritus being due to leukæmia necessitates the examination of the blood

Graves disease and lymphadenoma may also be causes of general pruritus

In true senile pruritus the skin is dry inelastic and withered (*vide* p 660) There may be very little evidence of scratching for the senile skin appears to be unusually resistant Arterio sclerosis affecting the central nervous system probably accounts for some of these cases and pruritus may accompany hypertension

Nervous strain worry anxiety fatigue and general debility anæmia avitaminosis are common contributory causes but often pruritus both generalised and localised is to be regarded as a psychoneurosis and the patient handled accordingly

The *prognosis* depends upon whether the cause can be found and removed In the true senile type treatment has little influence

Treatment The remarks made above emphasise the importance of treating the cause The parasitic forms of pruritus are dealt with elsewhere Glycosuria renal disease and other general affections are treated on the usual lines If no definite cause can be found the diet should receive careful attention Probably any change in diet is helpful Sometimes a pure milk diet or a diet of milk and vegetables may be prescribed at other times a high protein diet with restricted fluids carbohydrates and salt gives some relief Strong alcoholic drinks should be forbidden Tea and coffee are also better avoided The bowels should be regulated and the condition of the teeth should be carefully examined and if necessary the aid of the dentist should be invoked In nervous subjects rest avoidance of worry residence in the country or by the sea should be obtained if possible In hospital practice a few weeks in the wards produce a remarkable improvement which unfortunately often disappears on the patient s returning to the usual routine of life Lumbar puncture has been advocated by some authors and auto hæmotherapy (the removal of 10 c c of blood from a vein and its immediate injection into the buttock) has its advocates In those subjects in whom no particular cause is apparent and they form the majority of patients suffering from primary pruritus it is important to realise that cure can only be effected by conscious or sub conscious psychological adjustment The doctor must scrupulously avoid any suggestion that such cases are hopeless or difficult and should direct his attention to general sedative tonic treatment rather than to frequently changed local applications Bromide in a mixture vitamin B_1 (3 milligrammes of aneurin twice a day) and general tonics are of service Small doses of antimony wine and aspirin are frequently helpful Morphia

and cocaine whether administered internally or applied locally must be banned entirely Sedative tonic measures—fractional doses of phenobarbitone or bromide with strychnine and gentian—are most helpful It is very material to his improvement however that the patient should understand the nature of his trouble and realise that it is a reaction to stress and strain for only so is he able to help himself Serious cases which fail to respond to such measures may demand the aid of a psychotherapist

Local treatment Bran gelatin oatmeal sodium sulphate or tar extract added to the bath, or weak alkaline baths sometimes give relief Tepid and warm douches applied to the affected parts daily for five minutes are also advocated The patient must not rub his skin vigorously with a rough towel after such treatment Static electric baths and high frequency treatment may also be tried In some cases short exposures to X rays or Grenz rays every fourteen days relieve the itching remarkably Tar and lead lotion carbolic acid 2 to 5 per cent salicylic acid 2 to 10 per cent chloral hydrate, 2 per cent resorcin 2 per cent and menthol 2 to 10 per cent may all be tried and it is often necessary to change the application from time to time To protect the parts from air plasters pastes and varnishes (see Formulæ) may be applied Local anæsthetics should be avoided

Local Forms of Pruritus

The localised varieties of pruritus have the same significance as general itching and the remarks in preceding paragraphs apply equally to them In practice it will be found that some local factor directs the patient's attention to a particular area There may be associated leucoderma

Pruritus ani Itching at the anus is the commonest form of local pruritus The parts affected are the anal canal and a circumscribed area about an inch wide around the orifice The itching is often intense and may lead to extreme nervous depression and melancholia The peri anal skin is often severely excoriated by scratching and may be in an eczematous condition with radiating fissures This eczematous eruption may extend forwards into the perineum and backwards into the gluteal cleft In long standing cases the skin becomes thickened rough and parchment like either diffuse or localised as lichen simplex

Ætiology Pruritus ani is more common in the male than in the female It may occur at any age from local causes but the peculiarly intractable neurotic form is most frequent in middle life and in old age The local conditions which may cause itching must be carefully considered before any case is classed as being neurotic though the great majority of cases are of this class They are (1) Thread worms which are the commonest cause of itching in this region in children but pruritus due to them is rare in adult life The impregnated female migrates out of the anus and lays her eggs in the natal folds The developed eggs are commonly carried by the fingers to the mouth They are hatched in the bowel and become mature in the large intestine The cycle of development is two weeks (2) Hæmorrhoids fissures, polypi A careful examination will often show that there are small superficial fissures or ulcers between the corrugations which are present in the skin of this region (3) Chronic proctitis with irritating discharges (4) Chronic constipation which may cause irritation by con

gestion and by the passage of hard scybalous masses (5) Pelvic tumours also cause chronic congestion In the female the presence of glycosuria or leucorrhœa may start a vulval irritation which spreads to the anal region Infection with trichomonas vaginalis may be an exciting factor (6) Skin diseases *e g* tinea lichen planus psoriasis seborrhœic dermatitis and morphœa

The general conditions requiring attention have been previously enumerated

The *prognosis* depends upon whether the local or general condition causing the pruritus can be removed and upon the psychological response of the patient

Treatment It is important that the parts should be carefully cleansed after defæcation This is best done with a pad of cotton wool wetted with 1 per cent solution of glauber salt using a little carbolic soap and followed by the application of 2 per cent of phenol in liq hydrarg perchlor After careful drying a powder containing equal parts of zinc oxide and starch or talc should be applied The addition of calomel (25 per cent) to this powder is often of great service If there is much thickening of the skin benefit is derived by painting the part with pure carbolic acid which causes exfoliation and leaves a superficial denuded area which heals up rapidly under Lassar s paste (zinc oxid 24 parts starch 24 parts acid salicylic 2 parts vaselin 50 parts) The patient should remain in bed until the parts are healed If there is eczematisation or infection with pus cocci a 2 per cent aqueous gentian violet paint or a 1–3 per cent solution of silver nitrate is useful

In the neurotic cases the patience of the sufferer and of his medical attendant is sorely tried and the large number of remedies suggested is evidence of the intractable nature of the affection In some instances greasy applications appear to be irritant in others they are the only form tolerated In mild cases Lassar s paste or a zinc ointment with a little salicylic acid (2 per cent) is useful In others carbolic acid (1 in 20) in vaselin menthol 2 to 10 per cent weak tar or ichthyol ointments may be of service The application of a sponge wrung out in hot water and applied to the part will sometimes give the patient sufficient relief to ensure sleep Anæsthetic ointments should be avoided

Great benefit is often obtained by the local use of the high frequency electrode Without question the most valuable local application is unfiltered X ray therapy in fractional dosage at monthly intervals care being taken to protect the scrotum from the rays Unless combined with proper general and local treatment the measure may—and often does—prove futile when taking its proper place in the management of the case as a whole it is however invaluable Grenz rays (300–600 r) sometimes succeed when X rays fail

The local conditions mentioned under etiology must be dealt with by appropriate measures Thread worms are best treated by directing attention to auto infection such as wearing gloves at night careful cutting of the finger nails and calomel or white precipitate ointment should be applied at night Quassia enemata and keratin coated quassia pills (grains) are also of service and the insertion of a medicated suppository often affords rapid relief of pruritus beginning in the anus

General treatment Apart from dietetic control the avoidance of strong alcohol and care of the bowels it is usually wise to prescribe calomel gr ¼ at night—as an intestinal antiseptic and corrective—and aspirin gr x at night or twice daily *Aspirin is most valuable in directly relieving* the pruritus, but in nervously debilitated subjects sedative tonics as bromide with strychnine and gentian may be desirable in addition General tonic treatment and the avoidance of worry, with a change to the sea or a sea trip are of value in debilitated nervous subjects Hypnotic suggestion has been tried with success in some cases and may be combined with full doses of omnopon and scopolamine

A proper understanding by the patient of the significance of emotional and nervous factors and of the importance of habit in relation to pruritus ani is essential if treatment is to be effective

The injection of local anæsthetics or excision of the peri anal skin with undercutting of the surrounding integument has been attended with success in some cases but we have seen many instances in which the relief was merely temporary and these surgical measures are not recommended

Pruritus vulvæ is another common and most distressing form of local pruritus It may be associated with a similar condition at the anus or be independent of it Glycosuria may be a cause and the irritation of thread worms and trichomonas infection must not be forgotten Local irritation by vaginal discharges must be looked for and failing evidence of this the condition of the uterus ovaries and tubes must be investigated *Pruritus vulvæ is a common phenomenon in pregnancy and is then* apparently due to congestion In some women there is pruritus at the catamenia and it is common at and after the climacteric which supports the view that some obscure ovarian dysfunction is a factor in some cases The irritation may lead to masturbation and it is believed this practice may cause the pruritus Eczematisation of the parts may be induced by scratching and local infection with pus organisms

As in pruritus ani some of the most intractable cases show no evidence of local disease and a careful examination reveals nothing but the evidence of scratching There is the same underlying neurotic condition and the same mental depression and tendency to melancholia The pruritus is rarely constant but there are attacks of intolerable itching when warm in bed or on taking exercise

The following skin diseases of the vulva are usually associated with pruritus lichen planus lichen sclerosus psoriasis seborrhœic dermatitis morphœa mycotic infections leucoplakia and kraurosis They require treatment appropriate to the disease

The *prognosis* depends upon the recognition and appropriate *treatment* of the local causative conditions upon the psychological background and upon the ability of the physician to maintain the patient s confidence

The *treatment* is in some respects on the same lines as that of pruritus ani The high frequency treatment is sometimes useful and great relief may often be obtained from three or four applications of X rays (50–100 *r* once a month) Grenz rays in doses of 300 *r* are also of value

Simple cooling lotions of lead or liquor hydrarg perchlor with the addition of 2 per cent phenol or liquor picis carb are most useful and the watery solutions of the dyes may be used if infection is present Creams

and pastes may be indicated if the skin is dry and cracks but grease is apt to increase the heat and irritation

The general treatment is that indicated in pruritus ani

In menopausal and post menopausal cases ovarian follicular hormone or stilbœstrol in 0.5 milligramme doses daily for ten days each month is sometimes highly successful

In some cases excision of the itching area has been performed The results are occasionally satisfactory but we have seen cases in which the pruritus has returned and excepting those associated with a precancerous leucoplakia when X rays are contra indicated surgical measures should be avoided

Pruritus of the external genitals in the male is not so common as in the female It may be the result of glycosuria and of urethral and prostatic affections which require careful examination A scrotal dermatitis in elderly men due to dribbling of urine may closely simulate the eczematisation of a pruritus The perineum and scrotum may be involved as an extension of pruritus ani and should be treated on the same lines

Pruritus of other sites Pruritus sometimes occurs about the *nose* in association with intranasal conditions naso pharyngitis etc Dental caries and buccal sepsis toilet and cosmetic preparations may cause similar irritation about the *mouth* The *scalp* is affected in association with pityriasis etc but pruritus capitis may be a pure neurosis and only respond to suggestion and sedatives

Palmar and *plantar pruritus* are probably due to toxic irritation from some focal sepsis or from a gastro intestinal source in the majority of cases

The treatment of the cause is indicated in all these local forms of pruritus If no cause is evident the general lines indicated above should be followed

Prurigo

The name prurigo is applied to a group of itching papular eruptions It is conveniently reserved for certain syndromes in which an idiopathic pruritus is the presenting feature In the opinion of many authors the pruritus is primary and the papules are produced as a special reaction of the skin to scratching By others the papules are looked upon as the essential feature the itching being secondary Prurigo like other itching affections is often complicated by pyogenic infection and with eczematous conditions produced by scratching

Besnier s prurigo is the commonest variety The more grave affection called after Hebra is uncommon in this country and there are somewhat rare generalised and local conditions of milder type which require consideration in this place

Hebra s prurigo is exceedingly chronic It begins in infancy or childhood and persists to adult life It is characterised by intense itching resulting in a widespread papular eruption and secondary changes in the skin produced by scratching

Etiology The cause is unknown The disease has been seen associated

with asthma Sensitisation to certain common articles of food and focal sepsis have been suggested as possible causes but the patient's response to emotional stimuli is often more widely spread which points to psychological factors as the etiological basis Due consideration must also be given to the endocrine balance for this determines the degree of chemical stimulation of the vegetative nervous system following emotional disturbances



Fig 70 Hebra's prurigo in a boy aged 13 The eruption had been present since infancy

Pathology The prurigo papule has at the onset an urticarial character viz œdema of the true skin with cellular infiltration about the vessel walls The horny layer of the epidermis is thickened and split to form vesicles, the papillæ and upper layers of the cutis are infiltrated with cells while the arrectores pilorum are thickened and contracted so that the hair follicles are in a state of erection In the later stages the vesicles in the stratum corneum become pustules The ultimate condition of the skin is chronic thickening of the prickle and corneous layers with obliteration of many of the fine furrows of the surface flattening of the papillæ and disappearance of the panniculus adiposus from compression The whole integument is thus coarsened and toughened

Clinical features At the onset it is difficult to distinguish this affection from strophulus It begins in the first year of life and at the age of three is characterised by intense itching the child constantly scratching, and producing innumerable excoriations of the punctate or linear type Sometimes there are slight remissions in the severity of the symptoms depending to some extent upon the seasons The wrinkled and worried facies is characteristic and reflects the continual discomfort and anxiety of the sufferer

In a characteristic case the skin has an earthy colour the surface resembles goose flesh from the projection of the hair follicles numbers of small pale or red papules are present, and as a rule large areas of excoriation linear or punctate, with scabs or crusts Localised or diffuse patches

of eczematous dermatitis and of pus infection are produced by constant scratching. In the advanced cases the whole integument feels thick and tough. The extensor surfaces of the limbs are the parts most affected; the trunk is often involved while the face is usually free. The lymphatic glands in the groins and axillae are enlarged and may suppurate (Fig. 76).

The children are irritable, nervous and wasted, and insomnia from the itching is common. As a rule the disease prevents the child from attending school. At puberty, or perhaps as late as twenty-five, there is a tendency to spontaneous resolution, but in some cases the prurigo persists to adult life.

Asthma—Eczema—Prurigo Syndrome

Besnier's prurigo.—Besnier separated from the group of chronic eczemas a variety of prurigo which differs from that described by von Hebra. In Besnier's prurigo the eruption particularly *affects the flexures* of the knees and elbows, the face and the neck. Like the Hebra type, the disease usually begins in infancy or childhood, and the *subject is often* highly strung and sensitive and may have a dry skin, xeroderma. It may be that the condition is the manifestation of an ectodermal defect, for like other defects it is inherited. The hypersensitive skin not only itches without obvious cause, but eczematous reactions are very readily induced, and asthma is not uncommonly associated with *the eruption or is* present in one or other of the parents. Occasionally some offending allergen is discovered which provokes the most severe exacerbations, but often a number of exciting allergens are found and the patient's reaction to them varies from time to time. It is likely, therefore, that some basic hypersensitivity of the skin which is associated with similar hypersensitivity and reactivity of the nervous system is the primary basis for the condition.

With careful management some *improvement* may be expected to occur, and there is often a change for the better at puberty, but the tendency to relapsing prurigo of the flexures and to *eczematous* and papular responses in the skin is apt to persist throughout life and the condition is most prone to recur under emotional stress. The *affected* areas are diffusely lichenised, and attacks of weeping eczema with fissuring are common.

Under the name *prurigo ferox*, Vidal described some fortunately rare cases in which the lesions are *larger* and *affect the face* as well as the trunk and extremities. The itching is terrible.

Diagnosis.—Hebra's *prurigo* has to be distinguished from other itching eruptions. It *may* be *difficult at the onset* to detect any difference between this affection and strophulus, but strophulus being an urticarial eruption is apt to vary, new lesions appearing *suddenly* and symmetrically without preliminary scratching and some of them fading just as quickly as they arrive. On the other hand, *the papules of the* prurigos are produced by scratching, and although *the primary* response is an urticarial one, repeated trauma to the skin *surface* induces thickening and hypertrophy which has an *entirely different* appearance from the urticarial papule on smooth skin. Lymphatic glands are often involved in prurigo because of the repeated damage to the *skin* surface with resultant degrees of

somewhat scaly but in a flexure it becomes macerated by the warmth and moisture The disease may last for several months to two years or more Recurrences are frequent and sometimes fresh plaques develop The papular condition gradually disappears, leaving a brownish stain which may last for a long time but leucoderma is occasionally associated with localised prurigo There is no general pruritus and no urticaria factitia

The **diagnosis** is sometimes attended with difficulty The prurigos have to be distinguished from lichen planus and psoriasis from the seborrhoides from chronic eczema and from some of the syphilides The intense itching and the long duration are important features The papules of lichen planus are flat and shining their colour is peculiar and Wickham s striae and points are present, and there are often buccal lesions However the circumscribed chronic hypertrophic plaques of lichen planus are sometimes indistinguishable from lichen simplex The seborrhoides are mainly in the middle line of the trunk and in the flexures In chronic eczema there is usually a history of previous vesication and in syphilis there are the general symptoms and absence of itching and the serological reactions upon which the differential diagnosis is based

Treatment The treatment of the chronic localised prurigos is often unsatisfactory A simple plan is to cover the areas with an adhesive dressing of plaster such as the leucoplast of Unna but in chronic cases the X rays in 50 *r* or Grenz rays (300 *r*) doses at intervals of three weeks best relieve the itching and promote resolution Occasional paintings with liquid phenol 30 per cent phenol in glycerin or with crude coal tar may give rapid and lasting relief but symptoms and the conditioned scratch reflex should be controlled by adequate sedatives and reassurance

Hutchinson's summer prurigo, which appears to be dependent upon exposure to sun etc and affects the face the backs of the hands, and other exposed parts has elsewhere been considered (*vide* p 311)

Prurigo nodularis is a rare variety of prurigo characterised by a sparse eruption of discrete indurated papules and nodules situated chiefly on the extremities It usually occurs in women is intensely itching and very refractory to treatment Psychogenic factors appear to be most important in its etiology but we have seen the condition in a patient with thyrotoxicosis

CHAPTER IX

LICHEN PLANUS

LICHEN PLANUS is characterised by an eruption of small lilac tinted flat topped shiny papules polygonal in outline often showing a distribution peculiar to the disease and affecting mucous membranes

Etiology The cause of lichen planus is unknown The pathological appearances are compatible with a microbic or virus origin but of this there is no positive evidence and contact cases are extremely rare though we have seen suggestive cases Barber in a personal communication reports the occurrence of lichen planus in a mother and newly born babe The extreme rarity of the disease in infancy makes this association the more significant of infective origin The subjects are usually nervous and irritable and there is frequently a history of some shock worry or anxiety with insomnia antecedent to the eruption There has been a notable increase in the number of cases in civil practice during the last two great wars doubtless due to protracted mental strain These factors are sufficient to suggest a nervous origin but on the other hand cases are met with in which there is no obvious neurotic element

In support of the toxic hypothesis mention may be made of the occurrence of an eruption indistinguishable from lichen planus which occurs in about 1 to 2 per 1 000 persons taking mepacrine On the West Coast of Africa during the late war the following types were recognised a non weeping type exactly resembling lichen planus a similar condition associated with eczema a lichen rash passing on to exfoliative dermatitis and rarely pustular conditions All types tend to become generalised but the extremities bear the heaviest brunt Atrophy may follow an outbreak and when the scalp is involved alopecia may result The buccal mucosa may be involved as in true lichen planus (*Lancet* 1945 2 711 Arsenic bismuth gold and other drugs may cause a rash of similar type (p 181) Note that latent virus may be activated by drugs *e g* herpes or zoster Barber believes lichen planus is due to a virus

Local irritation may determine an outbreak and scratching may increase the extent of the eruption We have had several instances of familial cases

The disease is most common between the ages of thirty and sixty Seventy two per cent of 200 consecutive private patients were between these ages and 36 per cent in the fourth decade Women at any rate in England suffer more frequently than men females 60 per cent males 40 per cent Children are less often affected

Pathology The pathological appearances are compatible as already mentioned with a microbic or virus origin but no organism has been found The peculiar lilac tint is due to a combination of congestion pigmentation and thickening of the epidermis Both the epidermis and the true skin are involved The stratum mucosum is hypertrophied and in later lesions the horny layer is thickened The stratum granulosum is increased but the eleidine is irregularly thickened and this causes the network of white striæ which are pathognomonic of the eruption At first the cells of the horny layer are not nucleated but in older lesions the nuclei may be present Horny plugs are found at the mouths of some of the follicles The papillæ

are swollen often into a spheroidal shape and densely infiltrated with mononuclear cells There is inter cellular and intra cellular œdema and vesication may occur The lower margin of the infiltration is remarkably distinct in sections

Pigmentation is often marked and persists after the inflammation has resolved Atrophy of the epidermis and dermis may be a sequel

Similar conditions are found in the mucous membrane lesions

Clinical features The elementary lesion is a smooth flat topped papule of polygonal outline of a dull red to a violet or lilac colour varying in size from a pin s head to a millet seed or a little larger The surface of the papule has a burnished appearance reflecting light and this feature is a useful point in the differential diagnosis Some of the lesions have a slight depression in the centre indicating their origin around a duct or

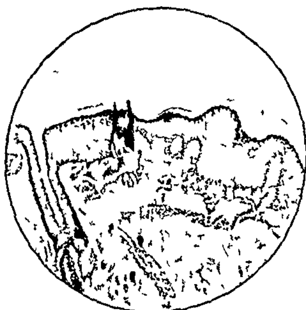


Fig 78 Lichen planus Microphotograph of section (Dr W J Oliver

follicle Under a lens and particularly if the surface has been moistened with oil and water white opalescent points or striæ forming a fine net work are visible This sign, first pointed out by Wickham is pathognomonic Occasionally the papules are almost the colour of the normal skin

The papules may be discrete but usually by their aggregation form patches of rounded or irregular shape covered with fine adherent scales which are made more obvious by lightly scratching the surface with the finger nail Careful examination will show that the large patches are composed of aggregations of small papules and even when the scaling is considerable, as in some of the thickened horny plaques below the knee it is usual to find typical shining flat topped papules at the margin of the scaly area, or in its vicinity Patches of common lichen planus are never formed by the peripheral extension of a papule as in psoriasis but in one rare form to be described later this method of extension may occur

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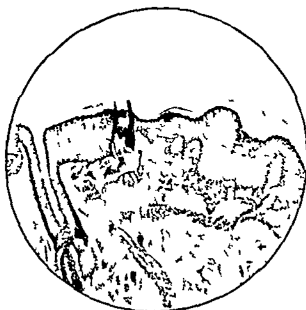


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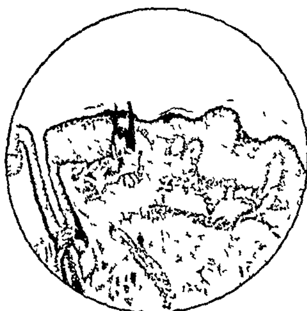


Fig 78 Lichen planus Microphotograph of section *
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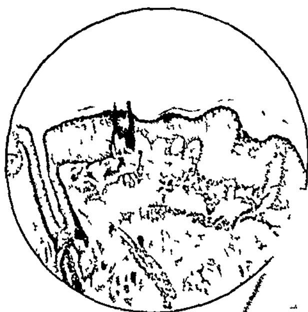


Fig 78 Lichen planus Microphotograph Dr W J Oliver

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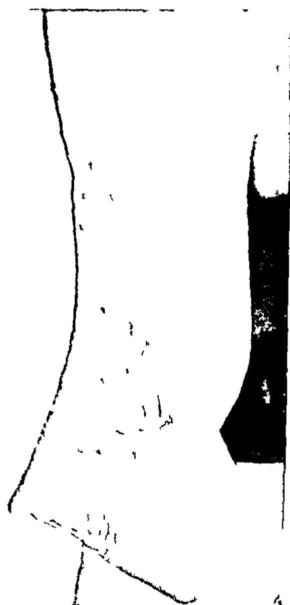
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PLATE 14



LICHEN PLANUS OF TONGUE AND BUCCAL MUCOSA

PLATE 13



LICHEN PLANUS

Patch of lilac tint on the lower part of the leg, and a few scattered papules above and below. The colour is quite characteristic.



Fig 79 Affection of [illegible]

flexor surfaces of the wrists and forearms [illegible] of the thighs and the hips [illegible] be involved On the trunk the [illegible] pressure of the corset is commonly affected [illegible] occurs on the neck The nails are rarely attacked [illegible] condition produced in an acute [illegible]

Lichen planus affects the [illegible] the case and the [illegible] in diagnosis (Plate 14) [illegible] cutaneous manifestations [illegible]

Very rarely a streak of lichen planus may run from the buttock to the inner side of the calf or to the heel resembling a nævus unius lateris Similar lesions may occur on the arm or elsewhere They are thought to follow Voigt's lines

Zoster like lesions In rare instances the eruption is limited to the area supplied by one or more cutaneous nerves on the trunk or extremities Barber has seen a zoster eruption replaced by lichen planus

Annular lesions Instead of forming plaques the papules may form rings varying from a quarter of an inch to three quarters of an inch in diameter The ringed lesions may be a prominent feature in the disease but they are usually associated with the commoner discrete papules and patches We have occasionally seen gyrate figures formed by broken rings Ringed lesions are common on the penis and scrotum

Lichen planus atrophicus is a variety in which the papules in the centre of a patch become cicatricial while fresh papules form at the periphery until an area perhaps an inch or two in diameter is involved The cicatricial area is pearly white and sometimes minute horny plugs are seen at the mouths of the follicles

Lichen sclerosus was thought by Hallopeau to be an atrophic variety of lichen planus but with others we regard it as a separate entity It often more closely resembles morphœa than lichen planus but the early lesions are firm flat papules and the smooth ivory surface is sparsely pitted with brownish horny plugs in some of the follicles or with minute depressions when the plugs have fallen

The disease is much more common in women than in men and although it may affect the trunk neck axillæ or limbs it is sometimes limited to the vulva and anus (p 662)

The cause is unknown and treatment unsatisfactory

Cicatricial patchy alopecia of the scalp associated with lichen planus elsewhere has been described by Graham Little

Lichen planus obtusus The lesions are disseminated brownish or violet tinted swellings larger than a pea They are not scaly and the itching is slight They show massive cellular infiltration

Lichen planus verrucosus or *Lichen hypertrophicus* The lesions are warty elevations of deeper violet colour than the common type and they are covered with masses of horny adherent scales They vary in size from a quarter to one inch They may be discrete or occur in groups Itching is variable and usually worse at night The legs are most affected but the thighs elbows and trunk may be involved (Fig 80)

Lichen planus from drugs An extraordinary hypertrophic lichen planus extensively involving trunk limbs head and face and mucous membranes may occur as the result of idiosyncrasy to the drug mepacrine used in the treatment of malaria All the hair may fall with the eruption

Injections of gold salts of organic arsenicals and of bismuth provoke on occasion widespread eruptions indistinguishable from ordinary lichen planus They are generally severe often involve the face and head as well as trunk and limbs They tend to leave very intense black pigmentation of the skin which persists for a long period

Lichen nitidus (Lat shining) Under this name Pinkus described a papular eruption characterised by numerous sharply defined flat topped

aspect of the cheeks, opposite the teeth is the favourite site of the eruption less frequently the tongue and palate are involved and the red margin of the lips is occasionally studded with small white papules The lesions are white porcelain like patches of irregular shape or a network of fine white striæ or white or yellowish discrete papules the size of a pin's head Similar lesions occur on the labia and on the glans penis, but in the latter situation the papules may be the same colour as the mucous membrane In rare cases the lesions may be confined to the buccal mucosa the glans penis or vulva

Itching is usually a predominant feature in lichen planus but occasionally it is slight and intermittent In some cases it is distressing to the patient *preventing sleep and causing frantic scratching* It is usually worst at the beginning of the attack, but it may persist in chronic patches The buccal lesions rarely trouble the patient Diarrhœa occasionally occurs and it has been suggested that this is due to an eruption of papules in the alimentary canal One of us (J T I) has twice seen the lesions on the rectal mucosa on sigmoidoscope examination The general symptoms depend upon the acuteness of the attack, and on the severity and duration of the itching

Occasionally in severe cases there is *considerable enlargement* of the lymphatic glands

Course Lichen planus may run an acute or a chronic course The chronic cases are by far the more common The disease begins insidiously, and progresses slowly, the eruption gradually spreading for several months, and then remaining stationary, but commonly there are subacute exacerbations in which fresh lesions appear and new areas are attacked Occasionally the disease persists for years Resolution takes place slowly the *upper extremities clearing before the lower* but the spots affected may remain pigmented for months

In the acute form large areas of the trunk and limbs are rapidly involved In the severest type the skin may be diffusely red and swollen, and small papules appear in large numbers on the affected areas There are intense itching and fever and other systemic disturbances The acute cases tend to clear up more rapidly than those of gradual onset perhaps in a month or two, but sometimes they pass into the chronic type

Variations *Acuminate lesions* sometimes occur with the plane papules (L plano pilaris) They are elevations with a central follicular plug, and run together to form nutmeg grater like patches The papules on the neck may have horny spines

Vesicles and bullæ occasionally occur in association with the characteristic papules As a rule they are transitory and of little importance

Linear lesions Associated with the discrete papules and patches it is not unusual to see streaks formed of a line of closely set papules These commonly occur on the limbs in the line of a scratch during the eruptive phase

Spillmann and his colleagues (*Bulletin de la Soc franç de Derm* 1930 p 1303) present a beautiful illustration of lichen planus in the circles produced by the cupping glass applied to the back for bronchitis The patient a male aged twenty four had typical lichen planus in the usual sites and on the buccal mucosa

and not flat and they usually occur in groups on the trunk They do not itch and there are no mucous membrane lesions

In parapsoriasis the lesions are not shining and the striæ of Wickham are absent and the mucous membranes are not affected

Lichen amyloidosis resembles hypertrophic lichen planus (p 101)

The atrophic lesions of lichen planus may be mistaken for idiopathic macular atrophy or scleroderma guttata (Fig 91 p 138) On the scalp they may simulate lupus erythematosus and pseudo pelade (Fig 375 p 718) and cicatricial alopecia of syphilitic or septic origin

Prognosis In the acute cases involving large areas the course is generally more rapid than in the common type The majority of cases however run a chronic course and may persist for *months sometimes* even for years Recurrences after long intervals occasionally occur We have notes of several cases in which four or five years have elapsed between the attacks

Treatment Diet appears to have no influence upon the disease but large doses of aneurin are thought to be of value

The patient is best at rest in bed and away from business and worry A change of environment and a holiday are of great value in treatment

Warm sedative baths are comforting and relieve the *irritation* Alkaline baths are also useful a teaspoonful of sodii bicarb being added to each gallon of water Chronic patches yield to small doses of the X rays

Pautrier claims to have cured lichen planus by applying X rays to the spinal cord without any local *treatment*

Hellier has shown that the treatment may be applied to skin elsewhere on the body—other than over the spinal cord—with equally good results The effects are probably psychological

In the early stages salicin in fifteen to twenty grain doses three *times* a day appears to lessen the inflammation and to diminish itching Antipyrin is also useful given in full doses at night when the irritation is severe It should be steadily pushed as far as the tolerance of the patient will allow Mercury in the form of the *biniodide* is also of great service

Good results often follow injections of gr ½ to gr 1 of Enesol (mercuric salicyl arsonate—Martindale) intramuscular or intravenous at weekly intervals to a total of 6 to 8 grains

Ingram has on three occasions seen intestinal hæmorrhage causing intussusception from intravenous use of the *drug* without other signs of intolerance—the courses of *treatment* were subsequently completed

Lotions ointments and pastes containing tar and carbolic acid are most useful to relieve irritation The *following* formulæ may be used —

R Liquor plumbi ♏60
  Liquor carbonis detergens ♏120
  Aquam ad oz 1

Liquefied phenol ten to fifteen *minims* to the ounce in lotion or ointment —

R Hydrarg perchlor gr 2
  Glycerin ♏10
  Ac carbol gr 20
  Ol Olivæ ♏40
  Ung zinci ad oz 1

shiny, pinhead sized papules without any tendency to grouping or confluence and practically the same colour as the normal skin It is commonest on the genitals the *abdomen breast and about the anus* Arndt collected thirteen cases all in males between the ages of twelve and forty five The lesions consist of epithelioid cells with giant cells directly under the *epidermis and* bounded laterally by a prolonged epithelial process The cells are mono and poly nuclear leucocytes

The small size of the lesions and the absence of the lilac tint distinguish L nitidus from the usual type of L planus

Diagnosis Mistaken *diagnoses are not infrequent in lichen planus* Perhaps the commonest eruption leading to error is lichen simplex This is an irritating dermatosis which in some sites *e g* the sides of the neck *may closely simulate lichen planus* It usually has a dull brownish red



FIG 80 Hypertrophic lichen planus

surface with aggregation of papules due to exaggeration of the skin pattern Discrete papules are rare and the mucosa not affected

Secondary syphilis *is not infrequently diagnosed especially in those* cases of lichen planus attended with pigmentation The peculiar lilac colour of the papules and their burnished character and white striae and points on the surface *of the lesions should be sufficiently distinctive* to prevent this mistake Moreover the lichen planus eruption is all of one type and the mucous membrane lesions are quite different from those of lues General enlargement of the lymphatic glands is rare *and there is* usually intense itching A serological test will remove doubt

The papules of strophulus are usually rounded smooth pale and shotty and should not be mistaken *for lichen planus which is not common in infancy*

In prurigo nodularis the individual lesions are rounded and not flat and there are no white striae (p 176)

Lichen scrofulosorum occurs in strumous patients and there is usually some obvious tuberculous disease The papules are acuminate or rounded

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℞ Hydrarg perchlor gr 2
Glycerin ♏10
Ac carbol gr 20
Ol Olivæ ♏40
Ung zinci ad oz 1

Lichen convex Under this name Castellani described a common disease in the natives of Ceylon characterised by numerous smooth convex pink or red follicular papules about $\frac{1}{12}$ to $\frac{1}{8}$ inch in diameter The chest back and shoulders are most affected The eruption itches intensely and lasts for several months, and tends to recur Antipruritic lotions are used

Dermatitis nodosa tropica occurs on the face and trunk The lesions are hemispherical angry red hard non scaly nodules as large as a pea There is intense itching but no urticaria The lymphatic glands and the parotid are enlarged and there is eosinophilia The disease may last for six months to a year or more The lesions leave no scar Drugs have no influence on the condition Antipruritic lotions are used to relieve the itching

Lichen Axillaris (Fox Fordyce-Disease)

This rare affection is characterised by small circular dome shaped, itching papules affecting the hairy parts of the axillae and pubes and is of endocrine origin (p 106)

CHAPTER X

ALOPECIA, LEUCODERMIA, SCLERODERMIA AND DERMATOMYOSITIS

THESE conditions are grouped together because the first two are not uncommonly associated and occasionally it is difficult to decide whether a white area of skin is leucodermia or morphœa White hair leucotrichia is seen in early and in resolving alopecia and is constant in leucodermic lesions on the scalp Leuconychia may also occur in either of these two diseases and in severe cases of alopecia the nails may be shed

Alopecia Areata

(Gk *alopekia* fox mange)

Etiology Alopecia areata is the result of disturbance of function in the skin usually the scalp which is followed by falling of hair This disturbance of function is consequent upon some shock to the constitution



FIG 81 Alopecia areata (common type)

which may be nervous or emotional toxic or traumatic and may occur with endocrine change or disturbance as at puberty menopause pregnancy etc Certain individuals are particularly prone to this pattern of reaction and may experience repeated attacks through life from a variety of causes

Not uncommonly the tendency to react in this fashion is a familial one though it is very uncommon to see two members of a family affected at the



Fig. 82. Leucotrichia following alopecia areata. The hair ultimately regained its normal colour



Fig. 83. Alopecia areata (ophiasic type)

same time. There is no evidence to support the idea that alopecia areata is dependent upon any parasitic or any other infection.

Pathology. The follicles are atrophic and there is often a small degree of cellular infiltration about the papillae. The hairs at the periphery of a

patch tend to be dystrophic showing withering of the root with a white tapering of the hair towards the root while the remainder of the hair is apparently normal and by contrast appears swollen and darker than normal giving rise to the characteristic note of exclamation hair It is brittle and tends to break off at a variable distance from the scalp The sebaceous glands are also atrophic

Clinical features *Common type* The onset is insidious the patient or a parent noticing that an area of the scalp has become bald The patches are usually round or oval often multiple and they gradually spread and sometimes by extension and coalescence may involve the



FIG 84 Hairs of alopecia areata magnified



FIG 85 Alopecia areata Clubbed hair

whole scalp The areas are smooth or *perhaps covered with downy hair* Round the margins the hairs are *frequently atrophic* at their proximal ends and of the usual diameter at the *periphery so that they* resemble the note of exclamation (!) This appearance was once *considered pathognomic* of alopecia areata but it is sometimes seen after the application of the X rays Occasionally the skin of the bald *patch* is thinned and easily wrinkled In the stage of *recovery the* patches are covered with downy pale hairs which subsequently become strong but are often *white for* a time In most cases however complete recovery of the strength and colour occurs (Fig 8)

Any part of the scalp may be *affected* and also the beard and moustache regions and the eyebrows Occasionally the patches are remarkably *symmetrical* In *rare* instances the bald area corresponds to that supplied by a cutaneous *nerve* *In the ophiasic* (serpentine) variety the bald area runs round the *margin* of the hairy scalp (Fig 83)

In some cases the areate patches fuse, and eventually the whole of the scalp becomes bald **alopecia totalis** The eyebrows and eyelashes are commonly affected also (Fig 86)

Leuconychia may occur in connection with alopecia areata and rarely the nails are shed

Universal alopecia in which not only the hair of the head eyebrows eyelashes and beard region is lost but also that of the axillary, pubic and other regions is comparatively rare We have seen it associated with extensive vitiligo It commonly begins like an alopecia areata and spreads rapidly It may occur in Loram's type of infantilism (p 104)

Alopecia areata sometimes affects areas on the shins

Diagnosis Alopecia areata has to be distinguished from cicatricial alopecia in which atrophy is usually manifest by smooth thin skin with



Fig 86 Alopecia totalis

absence of follicular orifices It has also to be diagnosed from some forms of ringworm Here the examination of hairs from the margin of the patch for fungus will usually be sufficient Pseudo pelade will be considered in the next section

Prognosis In young subjects recovery usually takes place after perhaps several months In the ophiasic form the prospects are not so good In older subjects the hair may never return Recurrences are not uncommon

As a rule alopecia areata of any extent and lasting more than a few months or occurring at puberty or at the menopause is likely to be severe and persistent Similarly if there is a strong family history or a strong past history of alopecia areata, or if the condition arises for no very apparent cause the prognosis is not good

Treatment Most cases of alopecia areata are a transient reaction to

some minor constitutional disturbance and cure occurs spontaneously in the course of two to four months Treatment in such cases makes little difference to the course of the affection Where the trouble is more persistent however attention must be paid to the general health towards the elimination of any foci of sepsis the correction of anæmias dyspepsias nervous debilities etc and any emotional stresses and strains must if possible be resolved Simple mild sedative tonic measures internally will usually help the patient such measures as phenobarbitone gr ½ once or twice a day mist pot brom co or vitamin B therapy Stimulating drugs thyroid etc should be avoided General ultra violet light therapy to the whole body is a valuable tonic measure in this regard and a change of environment and a holiday should be advised

These general measures constitute the most essential part of treatment and local measures are merely attempts to restore the hair follicles to functional activity by improving the blood supply They can have little effect upon the vegetative nervous system or the endocrine glands which are the real dictators of follicular activity

Friction and massage of the parts are advocated but the application of lotions and paints containing rubefacients appear to be more valuable An essential oil—*e g* oil of nutmeg 1 part olive oil 3 parts —daily rubbed in is a useful application Cantharides in varying strengths is most valuable either in a lotion or the following solution cantharides solution *1 drachm acetic acid 1 drachm spirit 1 ounce* It is *painted on lightly and* allowed to dry Should there be blistering the treatment is intermitted Ammonia turpentine acetic acid are also used (For formulæ *vide* p 749) Treatment with high frequency diathermy ionisation Faradism and local U V L have been sometimes attended with success but we are not convinced that they are of greater value than any other means of stimulating the circulation in the skin This also applies to Thorium X (p 770)

LEUCODERMIA MELANODERMIA AND CHLOASMA

(*Gk chloaza become green*)

The congenital pigmentary anomalies albinism and pigmented *moles* and in neuro fibromatosis have been discussed in Chapter III *and the effects of sunlight heat and* X rays in Chapter XVI *We have noticed that* various inflammatory conditions of the skin *leave stains* and that some drugs notably arsenic and silver discolour the skin Attention is drawn to the pigmentary syphilide (p 539) and to the *changes in leprosy (p 507)* and pinta (p 535) The dyschromias associated with general and visceral disease hæmochromatosis ochronosis jaundice and pigmentation in Addison s and Graves s diseases hyperpituitarism chronic intestinal stasis etc have been considered in Chapter IV We have already dealt with the peculiar pigmentary affection known as chloasma (p 105) The cause is endocrine and the condition occurs in pregnancy and in association with uterine and ovarian disease *In the chapter* on Tumours of the Skin we shall consider the *melanotic* carcinomata which usually develop from pigmented moles

Leucodermia Vitiligo

(Gk *leukos* white) (Lat *vitium*, a blemish)

The term leucodermia may be descriptively applied to any area of white skin, and this may occur as a congenital anomaly or secondary to inflammatory lesions such as the leucodermic macules of syphilis or similar macules that occasionally mark the resolved lesions of lichen planus psoriasis parapsoriasis pityriasis rosea eczema and prurigo It is to the idiopathic variety of primary leucodermia that the name *vitiligo* is given This condition is characterised by the absence of pigment in certain areas and also by the inability of the melanoblasts in the pale areas to form pigment This is manifest by the negative dopa reaction and a failure to react normally to ultraviolet light It is usually associated with hyperpigmentation around the white spots

While true leucodermia is to be regarded as a functional disturbance of the pigment mechanism similar patches of leucodermia sometimes affecting the hair leucotrichia may occur as a congenital abnormality Here the condition is undoubtedly a developmental defect of the skin and the affected areas are sharply defined and persist throughout life

Etiology The affection is more common in adolescence and youth than in mature age Females are more frequently affected than males, and the disease is commoner among the dark races than in fair people The cause of leucodermia is unknown but it has supervened upon shock, and has been observed in connection with Graves disease and with tabes Touraine and Brizard have collected 53 cases of *vitiligo* in which the distribution of the white patches has corresponded with one or more nerve root areas Blaschko (as far back as 1901) Jadassohn and others have confirmed the observation It is suggested that vitiligo is a neuro dermatosis Sequeira saw a man who while employed on a lightship in the Channel during the war of 1914-18 developed alopecia universalis with extensive vitiligo of the trunk and extremities Occasionally leucodermia has occurred in connection with alopecia areata lichen planus prurigo and scleroderma Cases are also recorded in which urticarial wheals could be easily produced (dermographism)

In some cases an erythematous reaction has been noted at the spreading margin of the white areas This is unusual and the significance of the hyperaemia is not understood The function of pigmentation is a very complex one and depends upon the activity of the special pigment forming cells melanoblasts and also upon the action of enzymes on pro pigment Although it is well known that pigmentation is influenced by suprarenal and ovarian functions we have no evidence that vitiligo is the result of any specific endocrine disturbance

Pathology There is a complete absence of melanin and a negative dopa reaction with increase of pigmentation in the surrounding areas Some observers have noticed inflammatory infiltrates of small round cells about the vessels and glandular elements and it is a question whether this is a reaction to some toxin or of the unguarded skin to ultraviolet light Mild degrees of atrophy may be present but are only observable through the microscope

Clinical features The white spots are generally rounded at the onset

and the margins are well defined The colour is milky or like ivory The spots are often limited but they may extend over the greater part of the body Schamberg pictures a negro who in seven years lost all the pigment of the skin except on small areas on the face and scrotum

The increase of pigment is most marked around the white areas and gradually shades away to the normal colour The hair on the white



Fig 87 Leucoderma Vitiligo

patches is usually devoid of colour—*leucotrichia* There are no symptoms and the glandular functions are quite normal and the white areas are not visibly atrophic

Any part of the body may be affected but the commonest sites are the hands forearms the face and neck and the lower part of the abdomen thighs and genital regions The mucous surfaces are not involved

Leucoderma may begin *acutely* but its evolution is usually slow

From time to time there may be variations and the increase of pigment in the summer often makes the white patches more conspicuous but, as a rule, the progress is one of gradual extension which by the coalescence of adjoining areas may involve large tracts

The white areas cannot be made to pigment by light but an actinic dermatitis is very readily produced on them although reaction to other irritants is variable Lupus erythematosus may arise on leucodermic areas

The **diagnosis** is usually easy, but the discoloration may cause the affection to be mistaken for tinea versicolor, and for some of the conditions *in which melanosis is a feature The areas of pityriasis versicolor are of a café au lait* tint and slightly scaly The scales may be scraped off and the fungus demonstrated by examination under the microscope in a little liquor potassæ

Syphilitic leucoderma is confined to the neck and occurs in women it has a peculiar dappled appearance (*vide* p 539) Arsenical pigmentation is also dappled but it affects the covered parts the abdomen and chest The pigmentation of Addison s disease etc, is not associated with white areas, and the buccal mucosa is affected Scleroderma might give rise to difficulty but is excluded by the toughness of the affected patches which is completely absent in leucoderma In the white patches of lepra there is anæsthesia and the nerves are thickened The atrophic patches of radio dermatitis are covered with telangiectases

Prognosis The disease is very little influenced by treatment It may rarely resolve or depigmentation may become universal

Treatment Since the etiology is obscure and no constant findings of endocrine dysfunction have been observed no specific remedy of the disease is known The simplest procedure is to tint the pale areas with walnut juice or permanganate of potash and this protective coloration will relieve the exhausted pigment cells from the light stimulus Oil of bergamot or some common impurity of it which may be a copper salt, often produces increased pigmentation of the skin and accounts for Berlocke dermatitis (see page 311) so that a 10 per cent solution of this oil in spirit has been applied to white areas of skin which are then exposed to ultraviolet light in an attempt to stimulate pigment formation Injections of gold salts have been combined with this local therapy because gold is known to sensitise the skin to sunlight Recently good results have been claimed for intensive vitamin B therapy combined with full doses of dilute hydrochloric acid with meals

Scleroderma

(*Gk skleros hard*)

The name Scleroderma is applied to a group of affections of unknown origin in which the skin and subcutaneous tissue become thick and tough, and ultimately atrophic

Sclerema neonatorum erroneously regarded as one type of scleroderma has been described already (p 102)

Etiology of scleroderma The cause of scleroderma is unknown A survey of the literature shows that this cutaneous affection occurs in con

nection with such a variety of conditions that it is difficult to believe that many of the casual relationships which have been suggested can be accepted No micro-organisms have been demonstrated in the cases examined but it is worthy of note that the disease has been seen as a sequel to scarlatina diphtheria erysipelas infectious tonsillitis pneumonia tuberculosis influenza malaria measles and other febrile illnesses

Seller believes that true scleroderma is a trophic disturbance due to some lack of intestinal ferments and states that a pancreatic dysfunction is indicated by a positive atoxyl lipase resistance test

Another hypothesis is that scleroderma is a tropho or angiotrophoneurosis caused by changes in the nervous system The peculiar distribution seen in some cases of morphœic scleroderma supports this contention It is more difficult to accept this hypothesis in cases of diffuse scleroderma which may possibly have a different cause

Yet another hypothesis is that scleroderma is the result of extensive endarteritis In this connection it is interesting to note its occasional co existence with Raynaud s disease

Regarding the influence of internal secretions in the causation of scleroderma thyroid atrophy is the commonest glandular defect but Graves disease Addison s disease and acromegaly have all been seen in association with the cutaneous affection In a woman under Sequeira s care scleroderma of both legs developed after she had been taking thyroid extract for myxœdema for sixteen years

Pathology Vascular dilatation proliferations of connective tissue cells and collagen are followed by endarteritis obliteration and absorption of the vessels and a diffuse sclerosis over which the epithelium is thinned Elastic tissue is not much affected glandular elements disappear and the horny layer of the epidermis may later be increased

Generalised Scleroderma

This condition is rare In exceptional cases it may develop acutely The patient first notices stiffness in the movement of the limbs and of the trunk and his breathing becomes difficult The malady progresses rapidly and may be fatal in a few weeks to several months The skin is thickened and indurated and these changes spread widely In some cases the underlying muscles are involved when the condition may be termed sclerodermatomyositis

The chronic form is less rare and the indurative process may be superficial or involve the subcutis in which calcinosis may develop It is preceded by wasting pains in the joints and neuralgia and from time to time there are febrile symptoms Sometimes there are areas of local asphyxia (Raynaud s phenomena) or erythematous patches with burning and itching In other cases there is œdema or local swelling This stage is followed by the peculiar induration and thickening of the skin which may affect the whole integument or large diffuse areas On palpation the affected parts are found to be in a condition of solid œdema they do not pit on pressure and there is attachment to the deep structures A remarkable immobility is thus produced The expressionless face looks as if carved in marble and speaking and taking food are exceedingly difficult The stiffness of the neck and chest impede respiration and some

times swallowing is difficult The proximal parts of the limbs are affected in greater or less degree but the movements of the fingers are less impaired The skin has a peculiar yellowish brown tint, with greyish or pink spots In the third stage a gradual atrophy supervenes perhaps after a lapse of some months The integument becomes fibrotic the sub cutaneous tissue is absorbed the muscles themselves may become tough and fibrous The skin is firmly attached both to them and to the bones



Fig 88 Scleroderma (showing contracture of indurated wax like skin)

The unyielding envelope thus formed is the cause of the greatest distress to the patients There is a constant sensation of cold but the cutaneous sensibility is unaffected Atrophy of the thyroid and also Graves disease are occasionally present but their relationship to the scleroderma is not understood Death usually occurs from some intercurrent disease especially pneumonia but also from the gradual loss of strength Recovery may take place if the atrophic stage has not been reached

Scleroderma of the Extremities

In this group two types of probably different causation have been included —

(1) *Acrosclerosis* (Sellei) This is probably secondary to vaso motor dysfunction with acrocyanosis and acro asphyxia as initial symptoms

(2) *Sclerodactylia* Usually an extension of ordinary scleroderma

(1) **Acrosclerosis** b gins at the periphery and slowly progresses The onset is rather like that of Raynaud s disease with darting neuralgic pains or a feeling of cold associated with dead fingers (acro asphyxia) or blueness of the extremities (acrocyanosis) Occasionally there is excessive sweating and sometimes blebs form As a rule the affection begins on the fingers but it may start on the auricles or on the nose

The intensity of the symptoms varies greatly from time to time but after the lapse of several months or perhaps years the fingers gradually waste the skin atrophies and is attached to the bones The digits cannot be extended or flexed and the skin which is firmly bound to the bones is greyish or dull in tint The process of mummification begins at the terminal phalanges and gradually spreads up the fingers to the forearms The gradual atrophy from the periphery produces a tapering digit like an elongated radish The subcutaneous tissue and the tendons are involved

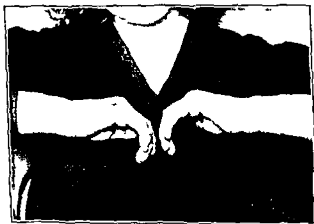


FIG 89 Sclerodactyly (Gk *skleros* hard *daktulos* finger)

Callous ulceration or necrosis with absorption of the bones leads to spontaneous amputation very similar to that observed in nerve leprosy The nails are atrophic or claw like The process described as occurring in the fingers occurs to a less degree in the toes

In acrosclerosis the process starts at the extremity of the digits and spreads to the hand or foot and the face presents a lack of expression but no thickening of the tissues

In scleroderma the process starts about the wrists and spreads towards the digits and facial changes are associated with sclerosis

In acrosclerosis no other parts than hands feet and face are affected the affection is not progressive beyond a certain state—though secondary local changes necrosis etc from interference with nutrition may continue

Treatment is without effect Prognosis except as regards the local condition is good

( ) **Sclerodactylia** In a characteristic case the extremities and the face are affected The features are fixed like those of a mask or statue

the skin being a peculiar pale pink tint The eyelids are closed with difficulty As the condition advances the movements of mastication and deglutition become impaired The hands and fingers are flexed (Fig 89) and movements are much restricted The hand muscles are wasted and the skin over them and the lower part of the forearms is pigmented The feet and legs are similarly but less involved

There remains one point to be mentioned and that is *pigmentation* This is always present but it may not be confined to the sclerosed areas of skin

Progressive scleroderma always runs a very slow course and death usually takes place from intercurrent disease Sudden death without apparent cause is however, not unknown

Diagnosis At the onset it may be very difficult to determine whether the condition is Raynaud's disease or scleroderma Leprosy is distinguished by the anæsthesia and thickening of the nerves

Syringomyelia is attended with peculiar alterations in the sensibility and by the absence of induration of the skin The pigmentary changes of scleroderma must be borne in mind in the differential diagnosis of melanoderma

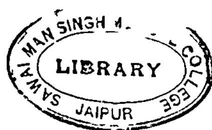
REFERENCE—J SELLEI 1934 *Brit Journ Derm and Syph* 46 523

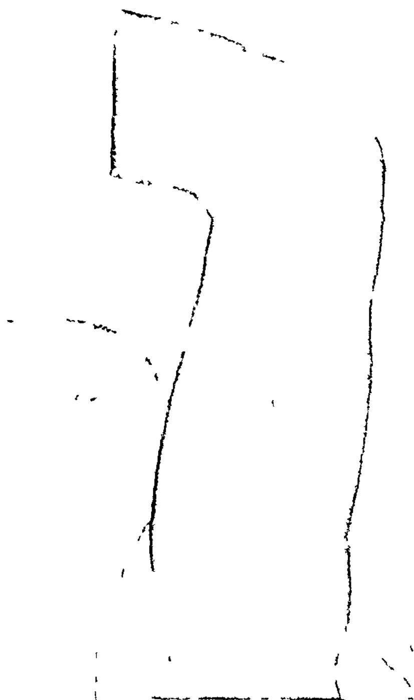
Localised Scleroderma Morphœa (Gk *morphe* form)

This variety of scleroderma differs from the previously described forms in being limited to plaques or bands The disease is much commoner in females than in males The plaques appear without any previous symptoms as thickened indurated pink or mauve coloured patches which gradually extend After a few weeks or perhaps several months the central part of the plaque becomes pale, and often assumes the colour of old ivory As a rule the surface of the white area is smooth but occasionally it may be nodular The patches are oval or irregular and the characteristic mauve zone about the pale central patch produces a very characteristic clinical picture Occasionally there are minute telangiectases on the area and rarely scaling The plaque is tough unpinchable and attached to the deeper structures There is no hair on it and sweating is absent In most cases the plaques gradually extend to a certain limit and then remain stationary Some patients complain of itching or pricking but this is usually in the early stages only When the part is sclerosed there is generally some degree of anæsthesia The ultimate condition in most cases is a depressed atrophic area though the condition may clear without leaving any change in the skin

The lesions of morphœa may appear on any part of the trunk or limbs and sometimes have a segmental distribution The vulva and anus may be affected and the lesions often irritate and may be mistaken for lichen sclerosus or leucoplakia Morphœa is not uncommon on the breasts or in the axilla

The band like form of morphœa is remarkable It has similar characters to the plaque variety but is often a deeper process and may involve underlying muscles The raised bands may show patchy hyperkeratosis which produces dull rough patches upon the waxy surface so peculiar to


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SCLERODERMIA — MORPHOEA.
Inner aspect of arm of young woman. Note ivory-like centre and lilac edge.

morphœa and scleroderma There is the same zone of mauve or purplish erythema with a central pale area which in time comes to resemble old ivory (Plate 15) The bands extend the length of the limbs or around the trunk or around a digit In one of our cases following an injury a band extended from the level of the left great trochanter across the thigh along the line of the sartorius muscle to the inner side of the knee The band here was about an inch and a half wide Below the knee it widened out to take in the anterior and inner surfaces of the leg ending on the foot just above the roots of the toes Associated with this were patches of sclerosis and atrophy affecting the left half of the abdomen The latter spots had the distribution of the anterior parts of cutaneous nerves but the lateral and posterior parts were unaffected The lesions of the trunk were on the



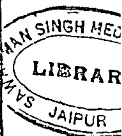


Fig 90 Fronto nasal morphœa

same side as the band on the limb This case illustrated another feature of morphœa the intractable character of the ulcerations produced by slight traumatism A slight blow on the shin was followed by ulceration which took many months to heal and rapidly broke down on the patient leaving hospital An interesting form is illustrated in Fig 90 Here the scleroderma affected the fronto nasal area causing a depressed scar like lesion extending from the root of the nose on to the forehead to one side of the middle line There was a groove in the frontal bone corresponding to the sclerosed area of skin This blaze type of lesion may have a central origin The band form of scleroderma may be associated with anterior poliomyelitis

The bands which occasionally form round the fingers or round the arm lead to œdema and swelling and may even cause necrotic changes similar to those observed in ainhum (p 664)

The diagnosis of the band form of morphœa should not present much difficulty. There is nothing like the sclerosed tracts running along a limb. The local rounded patches are diagnosed by their toughness, by the impossibility of pinching them up from the deeper tissues, and the mauve margin to the pale areas. Cancer en cuirasse is usually described as being likely to be mistaken, but it is generally secondary to a mammary tumour and only the rare apparently primary cases could be mistaken and in them there are pain, involvement of the glands and œdema of the arm.

Progressive hemiatrophy of the face involving bone, muscle and skin sometimes occurs in relation with morphœa.

Sclerodermia guttata White Spot Disease

(Lat. *gutta*, a drop)

This somewhat rare condition has received much attention in recent literature. The characteristic features are the development of a number of small pearly white indurated lesions. In the characteristic case illustrated in Fig. 91 the groups of spots were on the right side of the abdomen and on the left leg. Surrounding the groups of spots was a



Fig. 91. Sclerodermia guttata

number of very fine telangiectases. The patient was a woman aged fifty-five, and the history was that the eruption appeared as irritable papules which died away leaving white spots. The white spots may extend round the base of the neck like a necklace. In one of our cases the band form of scleroderma was associated with lesions of the guttate type. Guttate scleroderma must be differentiated from atrophic lichen planus and here the history will be of service. Characteristic lichen papules may be present in some other part of the body, and there is usually severe irritation, specially in the early stages of lichen planus. The white papules

of lichen sclerosus may present more difficulty but their surfaces often show follicular plugs or pits unlike the smooth pearly white lesions of morphœa guttata

Treatment of Scleroderma In all cases the patient should be warmly clad as relapses frequently follow chills and exposure In view of the occasional association of Graves disease and atrophy of the thyroid gland thyroid treatment has been tried but without much success Hypophysin and pituitrin are reported as being of benefit No specific remedy is known but one of us J T I has had some success with gold therapy in the treatment of morphœa and vitamin A appears to be of service Local treatment is of little value but small doses of X rays (150 r) and massage with a cod liver oil ointment may be tried

Dermatomyositis The earliest symptoms of this disease are erythema and swelling of the eyelids face and parts of the limbs An intermittent fever is usual in this stage Muscular weakness is noticed early or within a year of the cutaneous symptoms Later the affected muscles become indurated and atrophic and contractures are apt to develop The skin becomes harsh and scaly with varying degrees of induration and later pigmentary and vascular changes as seen in poikiloderma may develop (Fig 130)

These conditions were described together in a case by Petges and Cléjat in 1906 and after studying further cases in 1929 Petges changed the name of the condition to poikilo dermatomyositis Although the conditions do occur together Dowling and Freudenthal (1938) reviewed the evidence and concluded that they were two entirely separate diseases They are included here because a hardening of the skin imitating sclero derma is sometimes a well marked feature of dermatomyositis (see Poikiloderma p 273) The sclerodermatous changes may be prominent and produce a clinical picture indistinguishable from sclerodactylia

The etiology of both conditions like that of scleroderma remains obscure but it has been suggested that thyroid dysfunction is responsible for dermatomyositis

Histology The epidermis is thinned and sometimes hyperkeratotic the rete pegs are greatly diminished and often entirely absent There is no infiltration of the dermis but the collagen bundles are thickened and matted together which accounts for the sclerosis The connective tissue cells are usually decreased The elastic fibres are diminished or absent In the early stages the muscle fibres are œdematous and show infiltration with histiocytes plasma cells and lymphocytes with focal collections of central lymphocytes and peripheral plasma cells forming lymphorrhages Later the muscle fibres show varying degrees of degeneration with marked proliferation of the sarcolemma cells some of which invade the muscle fibres

REFERENCE J T INGRAM and I H J STEWART 1934 *Brit Journ Derm and Syph* 46 [illegible]

Nodular panniculitis This is a chronic inflammatory affection of the subcutaneous fat which may produce a picture resembling dermato myositis

REFERENCE F P WEBER and A M H GRAY 1924 *Brit Journ Derm and Syph* 36 545

CHAPTER XI

THE SEBORRHŒIC DERMATOSES

(Lat *sebum* tallow Gk *rhoia*, flow)

Pityriasis—Seborrhœic Eczema and Dermatitis—Seborrhœic Sycosis—Acne Vulgaris—Acne Necrotica—Rosacea

In this section we deal with a related group of affections which arise from a variety of causes in subjects of a particular constitutional pattern —the seborrhœic state or diathesis

Some of the reactions are peculiar to certain age periods and different reactions may arise in the same subject at different times and from different causes

The dermatoses under consideration are the following —

Pityriasis capitis (Dandruff Scurf of scalp)

Pityriasis corporis (Pityriasis circinata Flannel rash) A ringed scaling eruption of trunk and limbs an extension of pityriasis capitis

Simple eczematous dermatoses arising on seborrhœic sites sometimes as a consequence of the pityriasiform eruption These eczematous eruptions are of the usual patterns—erythematous squamous papular vesicular and weeping as well as the lichenified (neurodermatitis) and generalised types and pompholyx of hands and feet They receive brief mention here Further reference should be made to the section on eczema

Infective seborrhœic dermatitis and sycosis affecting similar sites and commonly arising on one or other of the above eruptions It is characterised by intractable pus coccal infections

Acne vulgaris—a follicular eruption commonly pubertal characterised by blackheads and secondary infection of sebaceous glands and other acneform eruptions as acne varioliformis

Rosacea, a papular eruption and erythema of the flush areas of the face commonly menopausal

A marked degree of seborrhœa—running of sebum—is natural to certain races and at certain periods of development as the prenatal pubertal menopausal and senile If the flow is reduced or increased or is altered in character at these or at other times it indicates a disturbed physiology Disturbances of function will be manifest in skin and mucous membranes and may be associated with functional disorders of other organs The individual must therefore be considered as a whole for disturbance of function of one organ necessarily bears upon the behaviour of the other organs

The exciting causes of such disturbances are unlimited *e g* climatic, infective and toxic nutritional and metabolic psychological and endocrine traumatic and environmental—but factors of fundamental importance are the endocrine balance and psychological state

One consequence of such disturbance is the alteration in resistance and in sensitiveness of the tissues especially skin and mucous membranes to irritants and to infection from organisms normally saprophytic and from pathogenic organisms

The clinical features of this important group of skin diseases are distinctive but divergent opinions are held as to the causes of the observed phenomena Before discussing the histology and symptoms it will be of advantage to consider (1) the nomenclature (2) the micro organisms believed to be concerned (3) the soil i e the peculiar characteristics of the skin and (4) the subjects of those disorders

(1) **Nomenclature** This is particularly unfortunate for the name seborrhœa which literally means flow of sebum has been applied to (a) hypersecretion of sebum (b) the cause of this increased secretion (c) any kind of greasy exudation on the skin whether from the sebaceous or from the sweat glands (d) dry scales upon the scalp the so called seborrhœa sicca and (e) a group of eruptions characterised by greasy scales This terminology is especially inappropriate in the case of seborrhœa sicca a name given to the common dry scaling of the scalp popularly known as dandruff or scurf There is no excess of sebaceous secretion in this condition and the flakes are composed of epidermal scales containing micro organisms which are the probable cause The name given by Willan pityriasis capitis (Gk *pityron* bran) appears to be the most convenient and it will be used here Pityriasis it may be mentioned is commonly applied to some other scaling eruptions pityriasis rosea pityriasis rubra pityriasis (tinea) versicolor pityriasis rubra pilaris

(2) The microscopic flora believed to be concerned in the production of these conditions are (a) The pityrosporon previously called the *spores of Malassez* or bottle bacillus of Sabouraud or the flask shape bacillus of Unna or the balloon bacillus of Hodara a parasite more closely related to the yeast fungi than to the bacteria is found in the epidermal scales of pityriasis capitis and in the other eruptions which have been grouped as seborrhœides Sabouraud points out the similarity of the epidermal affection it produces with pityriasis or tinea versicolor *which is caused by the microsporon furfur* Dowling and MacLeod claimed to have first cultured the fungus in 1926 but they and subsequent investigators believe that the organisms isolated by culture are *monilia of which* the pityrosporon may possibly be a variant

(b) The *staphylococcus epidermidis albus* a coccus growing on media in greyish white cultures This organism called by Unna the moro coccus from its development in mulberry like masses is found in colonies in the greasy scales of pityriasis *capitis and* in the scaly eruptions with greasy scales upon the trunk and elsewhere The organism is one of the common saprophytes present upon the skin but under certain conditions of warmth and moisture and probably an oily habitat it becomes unduly prevalent and forms colonies

(c) The *micro bacillus of acne* The *corynebacterium acnes* one of the diphtheroids of the skin is a small *rod like* Gram positive organism or group of organisms growing preferably in anaerobic media found in the lesions of acne vulgaris and in the oily *plugs* which can be readily expressed from the large sebaceous glands of the nose etc in oily seborrhœa

(d) The *pyogenic staphylococci* are frequently found in acne and some of the seborrhœic eruptions

(3) The character of the skin in patients liable to the affections under discussion is important The colour is often dull muddy or yellowish

the surface is greasy and the sebaceous orifices are unduly patent There is often hyperidrosis also, the sweat being not only excessive but naturally conserved by the oily film A luxuriant growth of hair is not uncommon at or about puberty Later, hypertrichosis may be a great trouble to the female patients *The greasy and moist conditions of the skin favour the growth of organisms*

There is often vaso motor instability with perniosis Seborrhœic skins react by wheals more easily than the normal and are susceptible *to external irritants, e g* industrial

(4) **The seborrhœic diathesis** It has been indicated that among the constitutional peculiarities met with in this state are a susceptibility of skin and mucous membrane to irritation and infection This often leads to chronic catarrh and sepsis in accessory nasal sinuses to pyorrhœa and dental caries (soft teeth) and sepsis

Dyspepsia and constipation may arise early in life and may give rise to nutritional and metabolic disturbances The urine of the seborrhœic subject tends to be acid and particularly so at times of active eruption *when the administration of alkalies is beneficial* *Excess of fats sweet and* starchy foods—not well tolerated by these subjects—may have some *bearing upon etiology and a relative deficiency of some constituents of* the vitamin B complex is implied by biochemical and clinical observations

Nervous instability is often marked and may be a factor of major importance

There is no doubt that inheritance and race are important and the evolution of the sexual function attended with rapid development of the appendages of the skin as indicated by growth of hair, etc plays a prominent part in the etiology of the diseases here discussed Age has a marked influence the common time for the appearance of pityriasis capitis being between six and ten years acne vulgaris is found between puberty and twenty five a little later some degree of alopecia not necessarily related to pityriasis develops and in the forties rosacea is common In the elderly we get the development of seborrhœic warts and keratomata *Particularly intractable seborrhœic eruptions are seen at puberty and the menopause and in adolescence*

The *distribution of the eruptions is also characteristic* Pityriasis capitis affects the scalp pityriasis corporis and the seborrhœides affect the sternal and *interscapular regions and flexures* acne and oily seborrhœa favour the nose and naso labial sulci the temples forehead and chin and the back and chest

General treatment In the treatment of any seborrhœic affections the metabolic dietetic psychological climatic or other general considerations may call for attention over and above any treatment of the skin

The nature of the employment the humidity, heat dust, etc may bear upon the course of such affections Thus work underground in coal mines is unsuitable

Tropical and subtropical climates are contra indicated

Psychological treatment and the use of mild sedative tonic measures *may be necessary*

Endocrine therapy particularly thyroid and œstrogen hormone has a place in the treatment of some of these disorders

Diet should be of high protein and vitamin content with restricted carbohydrates and fats

Alkalies are often desirable sufficient to keep the urine slightly alkaline

Dental toilet and treatment of any nose or throat sepsis are important

Pityriasis capitis Dandruff Scurf

A chronic parasitic affection of the scalp characterised by the formation of easily detached scales

Etiology Dandruff usually appears first in childhood between the ages of six and ten It is exceedingly common and if due to a parasite as is believed this organism must be widely spread and there is therefore great difficulty in tracing contagion Many members of a family may be



Fig 8' —Pityriasis capitis with alopecia

affected and the tendency appears to be hereditary Many acute attacks of seborrhœic dermatitis have quickly followed a visit to a hairdresser but whether a more virulent organism was acquired or an existing infection was activated by some application friction or overheating is a moot point

Pathology In the *dry* scales of pityriasis large numbers of the spores of Malassez (Pityrosporon ovale) are found and these are believed to be the cause of the affection The organism is confined to the superficial layers of the epidermis the scales themselves being composed of corneous cells mostly without nuclei Sabouraud says that there is no alteration in the sebaceous glands In the *greasy* scales there is in addition to the spores of Malassez the *staphylococcus epidermidis albus* growing in mulberry like masses The lesions consist of epidermal scales with spaces containing serum which has coagulated (Sabouraud) The condition may become eczematised when on removal of the scale or crust a moist oozing surface is found It is clear that one phase may pass imperceptibly into the other

Clinical features The affection is almost absolutely limited to the hairy scalp, and particularly attacks the vertex upper parts of the parietal temporal and the retro auricular regions The affected areas are covered with greyish or earthy coloured epidermic scales' The squames are powdery, lamellar or branny, easily detached and constantly fall on the clothes At this stage the hair is unaffected Pityriasis is common in infancy when it is most readily controlled It may persist during child hood and at puberty a change often occurs the scales are thicker and have a yellowish colour and look greasy They do not fall so easily but the hair begins to come out at first in small amount in the warm weather only, or after excessive perspiration but later a moderate defluvium may occur all the year round The crown and the temples are the parts most affected

In some patients the disease is of the dry scaly variety for years in others the greasy character with early fall of hair is the important feature Seborrhœa using the term in the strict sense, is often associated with pityriasis The skin becomes greasy, the sebaceous glands are patent and acne vulgaris develops Scaling of the edges of the eyelids—squamous blepharitis—is dependent on pityriasis capitis and responds to treatment of the latter, the lids requiring a mild antiseptic ointment

Diagnosis In psoriasis the scaling is harder drier, silvery more abundant and localised than in pityriasis capitis Small spore ringworm of the scalp only occurs before puberty, is associated with broken hairs and stumps and shows characteristic fluorescence under the Wood s glass and fungus under the microscope

Pityriasis corporis Flannel rash This has long been recognised as a clinical type of parasitic eruption affecting the trunk and spreading some times to the upper segments of the limbs It is associated with pityriasis capitis The lesions appear on the sternal and interscapular regions and tend to keep to the middle line of the trunk particularly involving the sweat furrow of the back From these median areas the eruption may spread until large parts of the body and the upper arms and the thighs are affected The primary spot is small of a pink colour and covered with a greasy scale Each spot spreads to become a small disc or oval which usually clears up in the centre to form a ring The rings complete or broken by their junction form the figured lesions to which Unna gave the appropriate name petaloid The margin of the ring is red and always covered by the greasy scale while the centre often presents a pale dull yellow tint which recalls tinea versicolor (Plate 16) Sometimes there is fine furfuraceous scaling in the middle of the rings There is no infiltra tion The patient may complain of itching but this is not often sever

Diagnosis Pityriasis corporis is distinguished from pityriasis rosea by the tendency to form circinate figures its distribution and the absence of the herald patch In tinea versicolor the *cafe au lait* colour is distinctive and the microsporon furfur is easily found under the microscope in the scales mounted in liquor potassæ Some forms of tinea of the scaly variety might show a similarity but they are not likely to be limited to the middle line of the trunk and if there should be any doubt the micro scope at once dissipates it

Seborrhœic eczema and dermatitis This may be acute subacute or chronic Its origin in a scurfy scalp makes the diagnosis easy but the

PLATE 16



FIGURE 1. CORONA CIRCINATE SEBORRHOEIDE

Showing the petaloid arrangement of the lesions which are scaly at the margin [illegible] trunk and upper parts of the arms and thighs are affected



CORONA SEBORRHOICA

The red area covered with greasy scales extend in a band below the margin of the hairy scalp. The patent sebaceous follicles and greasy character of the skin of the nose, etc., are shown. The patient has since lost much of the hair on the temples.

on in the inflammatory reaction is

subject has an irritable and unduly atous reactions which do not differ grouped papulo vesicles of eczema sions of the scalp trunk and limbs e factor the prognosis is somewhat czema but eczema may arise in ling dandruff The importance of tes in the indication for soothing

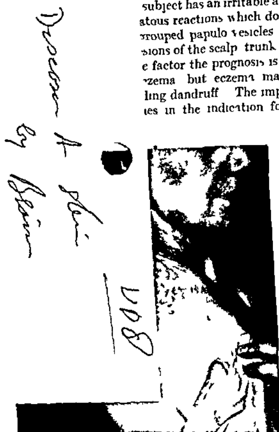


Fig 93 Seborrhoeic dermatitis (intertrigo) eczematous

applications sedatives and measures of desensitisation by X rays or autohæmotherapy

As already mentioned there may be no active inflammation for years but the patient may complain of itching and heat from time to time Then some alteration in the general health worry or anxiety or perhaps the application of a stimulant lotion causes a change in the character of the disease The irritability of the scalp increases the surface becomes hot and red and there is an excessive production of epidermal scales of a flaky greasy character The inflammatory redness of this seborrhœic dermatitis may not be limited exactly to the hairy scalp but spread beyond it forming a narrow band along the upper part of the forehead and the temples This is sometimes called the corona seborrhœica and is illustrated in Plate 17 where the greasy character of the skin is also shown The affected area is usually dry but slight irritation may cause considerable serous exudation which on drying forms masses of crust A

similar condition may spread from the occipital region on to the nape of the neck and down the back or in the retro auricular sulcus

According to Sabouraud seborrhœic dermatitis is more of the nature of an impetigo being caused by cocci and the association of staphylococcal infection is very common. One frequently meets with small pustules in the follicles (Bockhart's type of impetigo) on the nape and elsewhere in patients with greasy scales on the scalp, boils may also occur

In severe cases the eyebrows may be affected. The areas are red and covered with greasy yellowish scales and they may become eczematised. Blepharitis is often associated with this condition. The moustache region may suffer likewise but if the beard area is affected the scales are generally of the dry powdery variety. With the scalp affection there may be scaly patches on the face and according to Sabouraud these are due to pyogenic cocci. Retro auricular intertrigo is common and other folds and creases may be affected. There may follow a widespread eruption on trunk and limbs, of round and oval scaling red lesions irritable and tending to vesication or lichenisation



Fig. 94. Chronic pus-coccal seborrhœic dermatitis

Chronic seborrhœic dermatitis may follow the acute or subacute varieties on the head and face, ears and neck or persistent erythematous areas may be found in the axillæ flexures of the arms or as intertrigo beneath the breasts in the navel and groins or gluteal cleft. When the colour is pale and soft scales are present the seborrhœic lesion is not difficult to recognise but deeper coloured and non scaly lesions are more suggestive of psoriasis in spite of the anomalous flexural distribution. The distinction between some cases of psoriasis and seborrhœic dermatitis may be very subtle and since both diseases are common psoriasis is bound to occur in a seborrhœic subject and then a flexural distribution might be expected. A similar diagnostic difficulty is met with in the case of the chronic lichenised seborrhœides which may be found in the previously mentioned sites or in the lower lumbar region. Psoriasis and the rare psoriasiform epithelioma also occur in the latter site

Pus-coccal seborrhœic dermatitis and sycosis Pustular reactions may follow either of the above conditions. The skin of any or all the seborrhœic sites becomes red glazed and highly sensitive and is studded with small flat pustules which may be follicular in hairy sites and assume the characters of a sycosis. A chronic raw red dermatitis of the edges of the eyelids, sometimes ulcerative and pustular is associated with this condition. It is improved by an ointment of ½ per cent gentian violet with 2 per cent salicylic acid in an emulsified base. This state tends to be

chronic and intractable is frequently associated with profound nutritional metabolic or psychological disturbances and may be influenced by chronic septic foci in accessory nasal sinuses or other sites Miners are particularly prone to such affection and cannot usually be cured so long as they continue employment underground Jews are also subject to this type of disturbance

Local treatment of pityriasis and seborrhœic dermatitis We have left the consideration of the treatment of these affections till the clinical features of the whole group have been described for the trunk eruptions are so intimately connected with the scalp condition that one should not be



FIG. 0 Seborrhœic dermatitis showing sternal submammary and umbilical distribution of petaloid lesions

treated without the other From the point of view of prevention the treatment of the scalp is of great importance The habit of the patient as regards the toilet care of the skin and the nature and cleanliness of linen should be of high standard Cotton and not wool should be worn next the skin

Treatment of the scalp Where there is a constant accumulation of scales shampooing at regular intervals is necessary The following shampoo lotion is very useful Soft soap and spirit equal parts to which may be added thymol 10 grains or sulphur precip 30 grains or liq picis carb 1 drachm to the ounce The soap should be thoroughly washed out with fresh water A quillaia shampoo may also be used one to two teaspoonfuls of fluid extract of quillaia being added to half a basinful of warm water

Cetyltrimethyl ammonium bromide (C.T.A.B.) is an effective modern soapless shampoo. The shampooing should be done every two or three weeks, but if the scalp is greasy the washing may be repeated more frequently. The regular use of lotions containing resorcin 15 to 20 grains to the ounce with 15 minims of glycerin or spirit is useful in mild cases. It is better not to use resorcin if the hair is very fair, as it may tend to darken it. Euresol, a monoacetate of resorcin, is of great service and is free from this disadvantage. Instead of resorcin, salicylic acid may be used in the



Fig. 96. Seborrhœic sycosis

same strength or perchloride of mercury 1 in 2,000 or tar. A useful formula is:—

℞ Hydrarg. perchlor. gr. ¼
Euresol grs. 10 (or Resorcin)
Liq. picis carb. m. 10
Spirit. m. 180
Aq. rosemari ad oz. 1

In some cases an ointment suits the condition better and the scalp, unless inflamed, will tolerate antiseptics such as salicylic acid 10 grains to the ounce, with or without sulphur 10 grains to the ounce of an emulsifying base. Mercurials are *sometimes advantageous* and the red or yellow oxide 5 grains to the ounce with oil of cade or anthrasol ½ a drachm to

the ounce may be applied Mercury may also be used in combination with sulphur as in the following formula hydrarg bisulphid grs 4 sulphur præcip grs 15 to one ounce of ung aquosum Emulsifying agents are desirable for scalp pomades to facilitate removal by washing

Where the eruption spreads from the scalp to the face the calamine lotion or liniment is usually of service Ichthyol 10 minims to the ounce may be added to the liniment and sulphur præcip 2 per cent to the lotion

For the eruptions on the trunk there is nothing so satisfactory as sulphur which may be used in various strengths or as a combination of sulphur and salicylic acid of each 10 grains to an ounce of petroleum ointment or in a paste with starch Cinnabar is another useful remedy which may be

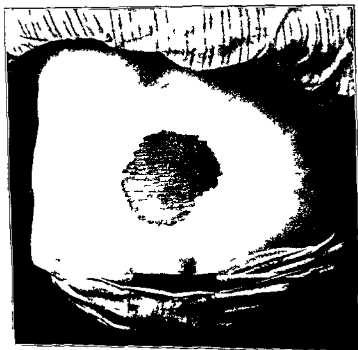


Fig 9 Psoriasiform seborrhœide Large plaque in sacral region

combined with sulphur as in the scalp ointment previously mentioned Resorcin 2 per cent in zinc paste or Lassar s paste is a popular remedy If the eruption is of great extent the stronger preparations must be used with care or part of the eruption should be treated at first to see how it bears the application The addition of 1 or 2 per cent of liq carbonis detergens to the preparations is useful if there is much itching

Local treatment of seborrhœic eczema or acute dermatitis In the acute phases these antiseptic measures are inappropriate and harmful Indeed too vigorous treatment of a simple pityriasis may provoke eczema or dermatitis

In an acute eczema or dermatitis soothing measures appropriate to these reactions must be employed Calamine lotion or liniment zinc

cream or Lassar's paste sometimes with tar and fractional doses of X rays (50–150 r) are of value. The aniline dyes which are non irritant are suitable and potassium permanganate baths may be prescribed in extensive cases.

Where there is a pus coccal dermatitis or sycosis, local treatment may include starch and boracic poultices for removing scabs, the aniline dyes, penicillin creams or spray, 5 per cent sulphathiazole paste (used with caution for short periods), ung quinolor co (Squibb) and fractional doses of X rays among other useful remedies.

Liquid Alibour (zinc sulph gr 6 cupri sulph gr 4 aq camph ad oz 1) used with equal parts of hot water is to be recommended in the treatment of sycosis.

General treatment as indicated in the early part of this chapter is applicable to all cases but is of least importance in the simple pityriasiform eruptions. *In acute manifestations, alkalinisation sufficient to produce an alkaline urine is desirable.*

In the eczematous states a mixture containing bromide, belladonna, nux vomica and gentian or quarter grain doses of phenobarbitone are necessary.

In the infective seborrhœic dermatoses sulphonamides by mouth—sulphathiazole, 0.5 grm t d s for ten days—or penicillin are of value. In these cases also it is of the highest importance to search for and deal with *any foci of infection*.

In all cases a diet rich in protein and fresh foods and restricted in carbohydrates, fats, fluids and salt is beneficial. Dried yeast tablets 3–6 after meals, supply the necessary vitamin B complex.

Many of the more chronic dermatoses respond well to œstrogenic therapy.

The nature of the employment and the psychological adjustment of the patient may call for careful consideration. On this account seborrhœic disorders have been a frequent cause of disability in war workers both in industry and in the armed forces.

Acne vulgaris

A chronic dysfunction of the sebaceous glands manifested by the hypersecretion of pasty sebum and plugging of the follicular orifices with keratin thus giving rise to comedones or blackheads. The retained sebum having a high bacterial content is very apt to set up an inflammatory reaction leading to suppuration which is maintained by the 'foreign body' effect of the central fatty mass.

Etiology. The hormones of the sex glands (and possibly others) play an important part in the etiology of common acne. Age is an important factor, acne beginning at puberty and rarely lasting beyond the twenty-fifth year or occurring *in married women. The activity of the appendages* of the skin at this age has already been mentioned.

The influence of hormones is found in cases of adrenocortical tumours causing precocious puberty. Even in young children the secondary sexual characters of precocity may be accompanied by acne of the pubescent type. A similar early development of the dermatosis has been seen in virilism in girls. In the hypo

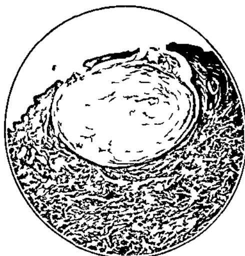


FIG 98 Acne vulgaris Comedo (1 inch objective)
(Section kindly lent by Dr Bemins)



FIG 99 Acne vulgaris

genital condition known as eunuchoidism which may follow mumps typhoid fever etc injections of testosterone propionate have not only produced growth of pubic and axillary hair and beard but facial acne has developed The pubescent type has also occurred with Cushing's syndrome

The skin of the subject of acne is oily the sebaceous glands are unduly patent or plugged, the complexion is muddy and there is usually pityriasis

cream or Lassar's paste sometimes *with tar and fractional doses of X rays* (50–150 r.) are of value. The aniline dyes, which are non-irritant, are *suitable and potassium* permanganate baths may be prescribed in extensive cases.

Where there is a pus-coccal dermatitis or sycosis, local treatment may include starch and boracic poultices for removing scabs, the aniline dyes, penicillin creams or spray, 5 per cent. sulphathiazole paste (used with *caution for short periods*), ung. quinolor co. (Squibb), and fractional doses of X rays among other useful remedies.

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Clinical features The comedo is a small black or dark brown point slightly elevated above the surface It varies in size from a pin s head to a millet seed and is always situated at the mouth of a sebaceous follicle By compression between the thumb nails a yellowish white greasy worm like mass with a dark cap is extruded These masses usually minute may approach a centimetre in length The cap is composed of keratin and inspissated sebum with impregnated dirt The comedones are found on the face especially on the nose and nasolabial sulci on the temples and cheeks and often in the ears The upper part of the chest and the back sometimes nearly as low as the sacrum are also affected in severe cases (Fig 100)

In some patients the comedones are the special feature in others the lesions pass on to a second stage but comedones are always present In this second stage the follicles are inflamed the eruption consisting of papules of a red or purplish colour slightly pointed and after two or three



Fig 101 Acne conglobata

days showing a minute yellow spot at the summit The papules vary from a pin s head to a small pea in size The yellow summit ruptures and a small quantity of thick pus escapes and the spot begins to shrink but is apt to remain as a small red papule and to suppurate again if the central comedo has not been liquidated or expressed In many instances the lesions undergo retrograde changes without the evacuation of pus The subsequent fibrosis and atrophy may leave small pits or the scars become hypertrophic as ugly keloids The face and the chest and back are the common sites of the eruption There is little pain

In some cases however the benign course described above is not followed The abscesses increase to the size of a large pea or become irregular or elongated from the fusion of suppurative foci in adjacent gland The surface is purplish the swelling indurated and there is considerable pain On evacuating such a lesion one is often surprised by the large quantity of thick inspissated pus or blood stained sero-pus which

capitis. These conditions form a suitable soil for the development of the micro-organisms. Dyspepsia, constipation and perhaps dietetic errors may play a part. Whitfield is of opinion that excess of starch, sugar or fat in the food increases the secretion apart from indigestion.

Pathology. The comedo is a worm-like mass composed of inspissated sebum, cells from the lining of the pilo-sebaceous follicle and a cocoon-like mass consisting of an enormous number of micro-bacilli, the bacillus of seborrhœa of Sabouraud or *bacillus acnes*. This organism, or as Western

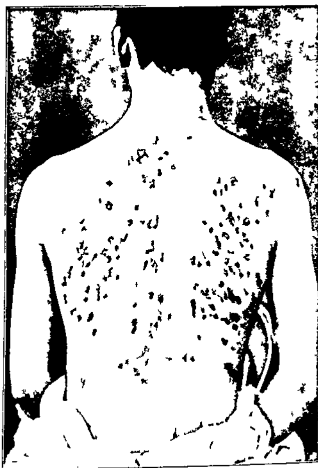


Fig. 100. Severe acne of the back. Male aged 17.

has suggested this group of organisms, is Gram positive and grows by preference on anaerobic media. Various investigators claim different characters culturally, and it is probable that there is not one form but several, and this would account for the disappointment attending treatment by vaccines. In the second stage the sebaceous glands are converted into pustules. There is infiltration of cells in and around the glands, and sometimes two or more adjoining lesions coalesce to form a deep-seated extensive abscess cavity. The abscesses may be superficial or deep and usually run a very chronic course. From them are obtained the acne bacilli and various forms of cocci which do not appear to be of the virulence of the pyogenic staphylococci.

is an anæmic factor to be corrected Concentrates of vitamins A and D and ascorbic acid 50 mg b d are often of value As tending to increase the resistance of the patient to the bacterial invasion fresh brewer s yeast a tablespoonful twice a day may be given or tablets of dried yeast In chronic cases the use of vaccines has sometimes proved valuable but the method should be reserved for the refractory cases of pustular acne

An autogenous vaccine is probably most effective and a polyvalent one containing acne bacilli staphylococci and streptococci is often used If staphylococcal abscesses are the main clinical feature a mixed toxoid vaccine may be more effective

The *local* treatment is very important Where there are numerous comedones and little pustulation the face should be washed with a 5 per cent sulphur or sulphur and balsam of Peru soap and bathed freely with hot water afterwards If the skin is greasy borax sodium bicarbonate or washing soda should be added to the hot water The process is followed by brisk friction with a soft towel This should be done nightly Removal of the comedones is also advisable but must be done with care Where there is much pustulation the treatment must be less energetic The bathing may be continued and the pustules and deep seated abscesses should be punctured with a fine pointed knife the narrower the blade the better and the pus expressed Some advise swabbing the cavities with carbolic acid but if properly emptied they heal up satisfactorily Another method of dealing with the early inflamed comedones is to fulgurate them with a minimal diathermic current or cauterise them with phenol or the galvanocautery

Lotions applied to the parts are often very useful A good one is the following Milk of sulphur alcohol and water in equal parts to which is added one tenth part of gum mucilage This is applied night and morning Another useful preparation is 5 to 10 per cent of zinc sulphate and potassa sulphurata in water dissolved separately and equal volumes of the solutions mixed

A good routine lotion is lotio calaminæ with the addition of 2 per cent of sulphur precipitata Two per cent of phenol may be added to combat infection Titanium dioxide prescribed as Siccolam (B D H) is a valuable application

A stronger antiseptic lotion of hydrarg perchloride gr 1 salicylic acid grs 10 *Industrial spirit* half an ounce and camphor water to one ounce is of service and may also be used on the scalp which is often greasy and scurfy Some degree of peeling often follows the use of the stronger lotions and exfoliation is a recognised method of removing the horny plugs obstructing the sebaceous follicles Full erythema doses of ultra violet light may be used but a peeling paste is more effective This consists of 6 to 1_ per cent of resorcin and sulphur in Lassar s paste It is applied thickly at night and removed in the morning when the calamine and sulphur lotion mentioned above should be used

Radiotherapy As a routine 150 r units of X rays may be given every two or three weeks for 3 to 4 doses but when seborrhœa is well marked it is best to give 200 r at two weeks intervals for three doses since the larger doses still safely below the erythema dose of rays have an inhibiting effect

is removed This "cold abscess" formation (non tuberculous) may be a severe and very disfiguring complication and may give rise to ugly keloidal scars Its onset may be sudden and the reason for this obscure, it may as suddenly subside and it is *not always wise to interfere surgically*

The term "acne punctata" is applied to a condition characterised by *numerous comedones* The terms "acne papulosa" "acne pustulosa" and "acne indurata" describe the other forms

The course of the eruption is essentially chronic with periods of activity and remission often depending to some extent upon the condition of the general health

Diagnosis *The diagnosis of acne is usually easy* The presence of the comedones and the peculiar limitation to certain regions are characteristic It must be remembered however that certain drug eruptions simulate acne very closely Many patients who take bromides for a long time suffer from an acne like eruption and one form of iodide eruption is very like the pustular form of acne The history would be of great assistance in the differential diagnosis but the absence of characteristic comedones is *of importance* and if necessary an analysis of the urine may be made It is interesting to note that a third member of the halogen group of elements chlorine produces an acne like eruption often very severe but closely simulating the common type It occurs in chlorine workers and a milder type has been seen in habitués of public swimming pools where the water is *chlorinated Workers in tar frequently suffer from* an acneiform eruption (Fig 159) and the medicinal application of tar and oil of cade in the form of an ointment produces in some subjects a papulo pustular eruption rather like acne but the history would set at rest any doubt as to the cause Acne like lesions may be produced by the heavy lubricating oils but they are usually on the forearms (Fig 157) and we have seen unusually prominent comedones in young subjects who turn bakelite or ebonite on lathes

Grouped comedones in infants are considered at p 216

Prognosis A guarded prognosis should be given Acne often runs a very chronic course, but tends to disappear spontaneously at the age of twenty five but necessary treatment should never be withheld on this account for some sequelæ will then be permanent

Treatment *General* Exercise in the open air is important The disfigurement particularly in young girls, tends to their staying too much *indoors The diet requires supervision* Sweets pastry fatty and highly seasoned and salted foods entrees etc should be avoided Plain simple food with plenty of protein green vegetables salads and raw fruit are advisable Adequate vitamins B and C are essential The dental condition may require attention and care should be given to thorough mastication Any tendency to constipation should be met by salines In sluggish types a small dose of the dry extract of thyroid may be given in sensitive subjects phenobarbitone gr ½ daily is of value If there is much pustulation sulphathiazole 0 5 grm t d s p c for ten days may subdue this complication

Recently the administration of œstrogenic hormone has been found beneficial in certain cases *particularly in overgrown precocious youths* with more severe types of acne Stilbœstrol 3-5 mg daily for one week and 1 mg daily for six weeks is the usual procedure In many cases there

size on the chest and rarely on the cheeks forehead scalp or back The follicles are plugged with a horny mass with a black summit There may be no evidence of inflammation but sometimes there is an areola of redness round each comedone In the case figured (Fig 102) there was extensive



Fig 10 Grouped comedones from camphorated oil

inflammation with suppuration on the chest The disease sometimes affects several members of a family

Treatment This should follow the lines suggested for adult acne

Acne necrotica (Acne varioliformis Acne frontalis)

A chronic follicular affection of adults characterised by shotty papulo pustules commonly limited to the frontal area and often leaving small pitted scars

Etiology The patients are usually sufferers from oily seborrhœa and pityriasis capitis Sabouraud believed the cause to be the *staphylococcus aureus*

Pathology The lesions develop in the follicles and consist of papulo-pustules with necrosis of the epidermis and of part of the true skin

Clinical features The eruption consists of small red swellings around the orifices of the follicles They are soon surmounted by small pustules

upon the sebaceous glands *Six months* should elapse before *repeating a course of X ray therapy*

Acne conglobata may be *regarded as the* deepest and most extreme *variety of pustular acne manifest by colliquative necrosis, deep abscesses granulomatous ulcers* and severe scarring The affection may be familial

The condition is peculiar to men over the age of twenty and usually *affects* the shoulders buttocks or thighs, but may develop on other parts including the scalp and face The process begins as a follicular or peri *follicular* inflammation of a granulomatous type very suggestive of a necrotic tuberculide and showing the same brownish red or purplish colour *Indolent* deep abscesses form under the discoloured skin which break down to discharge green yellow or blood stained pus and leave chronic sinuses or *extending serpiginous ulcers with thin undermined edges* The resulting scars are often hypertrophic or keloidal and may form bands and bridges resembling those of scrofuloderma We have seen cases in which the entire buttock or axillary regions were undermined with con fluent abscesses As a rule many large comedones and pustular acne *lesions of all sizes* and in all stages of evolution are present on the back and *chest and face* and neck which makes the diagnosis simple but sometimes *the* signs of acne are few or absent and then the diagnosis of the granuloma tous lesions presents a difficult problem In a descending order of proba bility tuberculosis *blastomycosis bromide or iodide* granulomata and syphilis have to be considered and excluded by the appropriate tests and examinations In acne conglobata staphylococci streptococci and diphtheroids are usually found in the pus but some of the closed abscesses may be sterile and may be regarded as pustular and necrotic bacterides the staphylococcus aureus being most suspect (Fig 101)

Treatment should follow general principles The prognosis is bad

Perifolliculitis capitis abscedens et suffodiens *Described under* the above title or as dissecting cellulitis of the scalp is a condition closely resembling *acne* conglobata but limited to the scalp The abscesses are smaller than in the latter condition and they are frequently connected by horizontal sinuses above which the hair is destroyed as it is over the abscesses The resulting scars are often hypertrophic

Grouped Comedones in Infants

A rather uncommon affection of young infants, and occasionally of school children characterised by the formation of groups of blackheads, which may sometimes pass on to suppuration

Pathology The cause is unknown but the spores of Malassez are present in large numbers in the comedones In several cases examined by Dr C J Western *no acne bacilli were found either in film preparations* or in culture Cultures grew *staphylococcus albus* only Males are affected more frequently than females There is often a history of local irritation such as the application of tallow plasters camphorated oil or of chest protectors of dirty flannel When grouped comedones arise after the use of grease on a seborrhoeic skin the eruption is presumably analogous to *that* known as oil acne

Clinical features *The lesions are localised to a single area of* variable

size on the chest and rarely on the cheeks forehead scalp or back The follicles are plugged with a horny mass with a black summit There may be no evidence of inflammation but sometimes there is an areola of redness round each comedone In the case figured (Fig 10?) there was extensive



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Clinical features The lesions are localised to a single area of variable

condition of the skin pityriasis capitis etc and acne vulgaris may precede it

The basic factor in rosacea is a vaso motor instability in a seborrhoeic subject This instability is shown by the reaction to mental physical and physiological stimuli It is largely influenced by emotional upsets and especially by endocrine factors associated with the menopause

We are aware that in some cases there is evidence of gastro intestinal disorder with or without chronic alcoholism and a few cases may be dependent on secondary congestion from cardiac or pulmonary disease



FIG 104 Pustular rosacea

At one time stress was laid upon hypo chlorhydria as a determining cause but our experience suggests that emotional and endocrine factors are of far greater importance We have rarely found fractional test meals of assistance in diagnosis but they may be indicative of treatment

As physical factors influencing rosacea must be mentioned the peculiar sensitivity of the affected areas to exposure to cold and changes of temperature

Pathology The vessels of the true skin are dilated and there is inflammation of the sebaceous glands The dilatation of the vessels often becomes permanent leading to telangiectases which are sometimes a prominent feature The pustules which form in the sebaceous glands are

which dry to form yellowish crusts On the fall of the scabs small depressed scars are left The spots vary in size from 1–3 mm in diameter The character of the pustules and scarring suggested the name "varioliform" The eruption comes out in crops and particularly affects the forehead and temples but it often extends on to the hairy scalp for a short distance The auricles and the sides of the nose may be affected rarely the upper part of the trunk Necrotic acne runs an extremely chronic course and may last for years

Occasionally the eruption extends over the trunk and limbs leaving pock mark scars and simulating a papulo necrotic tuberculide or some forms of dermatitis herpetiformis It is not uncommon to see a mild discrete, serous follicular eruption on the scalp and other parts irritable and *often capped by a small crystal scab but not giving rise to scars* It



FIG 103 Acne frontalis Male aged 42

appears to be related to this affection and is sometimes termed acne *varioliformis minutissima*

Treatment The application of a carbolic or sulphur soap and rubbing in *ung hydrarg ammon* cures the eruption in a few weeks

The affection, however tends to be recurrent and commonly waxes and wanes with general and nervous health and tone which then call for attention

Rosacea Gutta rosea (Acne rosacea)

A chronic affection of the middle part of the face forehead and chin characterised by erythema flushing telangiectases and the formation of pustules

Etiology Rosacea may begin about puberty, but it is most common in the fourth decade of life and tends to disappear in advanced age It is much more frequent in women than in men It is often associated with the group of conditions classed as "seborrhoeic" an oily

condition of the skin pityriasis capitis etc and acne vulgaris may precede it

The basic factor in rosacea is a vaso motor instability in a seborrhœic subject This instability is shown by the reaction to mental physical and physiological stimuli It is largely influenced by emotional upsets and especially by endocrine factors associated with the menopause

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Fig 104 Papular rosacea

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not preceded by the formation of comedones. Many of the firm papules, pin head sized or larger, which arise in the skin of the "flush areas" are independent of the follicles. They are composed of aggregations of histiocytic cells, mostly mononuclear and plasma, occasionally giant cells and present a structure somewhat resembling a 'tubercle.'

In the condition known as *rhinophyma*, an occasional sequel of rosacea, there is hyperplasia of the connective tissue and of the sebaceous glands and vessels. Numerous mast cells are found in the meshes of the connective tissue, and recurrent lymphangitis increases the swelling.



FIG 102 Rhinophyma

Clinical features Rosacea begins by the formation of diffuse or scattered red patches on the "flush area" of the cheeks, nose and chin. Under the influence of changes of temperature the colour may become brighter or livid. After the taking of hot drinks or sometimes after a meal in many cases the midday meal, there is a tendency to flush, and the onset of the menstrual period often aggravates these symptoms. For a variable time these are the prominent features but at length the vessels become permanently enlarged, notably in the naso labial sulci and on the dorsum of the nose, on the cheeks, forehead and chin. In the type called "couperose" by French authors this condition persists. More commonly the sebaceous glands are obviously dilated. Small red papules develop on the smooth skin. They are granulomatous in character and may break

PLATE 18



ACNE ROSACEA

Female aged 4. The plate shows the telangiectases and inflammatory papules on the flush area, forehead and chin, and corneal opacities from keratitis.

down and necrose and give rise to secondary infection Follicular lesions as in other seborrhœic conditions occur but they are of the same type as those on the smooth skin The rosacea elements are thus quite different from acne vulgaris Occasional comedones may be present but are not part of the rosacea Pustulation is a frequent complication The pustules appear in small number from time to time but are not preceded by comedones like acne vulgaris and they rarely have the deep character of indurated acne In some cases the pustulation is excessive and there may be many abscesses scattered over the affected areas



FIG 106 Rhinophyma after operation

A variety characterised by small scattered papulo pustules the size of a pin s head is described as a special affection by Brocq

The lesions are usually most developed on the chin in women with uterine disorders

Oily seborrhœa is a common symptom in all types Nearly all patients affected with rosacea suffer from coldness of the extremities

Ophthalmic surgeons have long recognised that keratitis and corneal ulcer in adults are commonly associated with rosacea the incidence being 5 10 per cent in our experience (Plate 18)

In the hypertrophic form or *Rhinophyma* the nose is swollen bulbous and with soft nodular excrescences covered by dilated vessels The glandular structures are hypertrophic and recurrent attacks of lymphan

gitis are common This variety is most common in heavy drinkers In the case illustrated the swelling was so great that the *patient s vision was* obstructed (Figs 105 106)

The disease is essentially chronic and may last for many years

The *diagnosis* is usually remarkably easy the symptom complex flushing, telangiectases and papulo pustules in the middle of the face and on the forehead and chin being characteristic Lupus pernio might lead to difficulty, but it is a rare condition in which the surface is chronically cold and bluish and is often associated with lividity of the extremities and of the lobes of the ears

A rosacea like eruption occasionally arises as a tuberculide and was described by Lewandowsky We have seen it in association with tuber*culous glands of the neck and Bazin s disease The lesions* show more infiltration and the condition is resistant to ordinary treatment but may *yield to gold injections*

Treatment The first point is to determine if possible the underlying cause and to treat dyspeptic *conditions constipation etc* In *many* cases this at once relieves the symptoms The diet should be simple meals evenly balanced alcohol must be avoided and it is wise to limit the ingestion of hot fluids particularly tea coffee and condiments Riboflavine and aneurin are sometimes of value

Tr belladonnæ 5–10 minims in an alkaline gentian mixture is useful and in cases associated with hypohydrochlorhydria great benefit usually follows the administration of dilute hydrochloric acid (½ to 1 drachm) diluted with water or lemon water with the chief meals

Sulphur grs x t d in tablet or lozenge or collosol sulphur in drachm doses appears to suit some cases Ichthyol internally may relieve the tendency to flushing *It should be given coated with keratin or in capsules* in doses of two and a half to five grains thrice daily Large doses of citrate *of potassium a drachm thrice daily, and also quinine are* sometimes useful Thyroid is recommended in rosacea occurring in women with hypothyroidism and in rhinophyma

Emotional conditions are benefited by luminal gr ¼ at night and endocrine defects at the menopause by stilbœstrol

The *local treatment* is of importance We have found that the technique introduced by MacCormac is remarkably successful It consists in giving 4–6 small fractional doses of X rays not exceeding 70 *r* weekly, and the application of an ointment of sulphur and salicylic acid 2 per cent of each The application of a resorcin paste—resorcin *20 grains zinc oxide and* starch of each 22 grains vaseline to one ounce—is sometimes of service *Ichthyol ointment, 20 to 40 grains to the ounce or a weak sulphur prepara*tion, may be used Where the flushing tendency is marked the calamine lotion—calamine two drachms zinc oxide half a drachm glycerine a drachm, and aq calcis to four ounces—is useful to relieve the hyperæmia When washing aggravates the condition it should be discontinued One per cent of the strong solution of lead subacetate in boiled milk may be well tolerated and may be followed by a talcum powder medicated with ichthammol or sulphur *The telangiectases are dealt with after the subsi*dence of the inflammatory symptoms The best measure is electrolysis of the individual vessels, using a *fine irido platinum needle which is inserted*

into the vessel and a current of two or three milliamperes is passed until it turns white Telangiectases may also be destroyed by lightly touching with the galvano cautery In the hypertrophic cases the masses may be treated by multiple scarification or if of great size pared away The latter treatment was adopted with good cosmetic results in the case figured

cases The disease affects the trunk and the proximal parts of the limbs first—in fact the area covered by the vest or bathing suit—but it may extend to the forearms The face hands legs and feet are usually exempt but may be affected Haxthausen drew attention to the occasional occurrence of lesions on the scalp in children

The evolution of the disease is highly characteristic There is an initial lesion or herald spot usually somewhere on the trunk or on the neck or a limb This patch is red and scaly and may be mistaken for tinea circinata The herald spot may itch slightly but is often overlooked by the patient especially if on the back The herald spot is observed in rather more than 50 per cent of cases It is often obvious from its size and character when the generalised eruption has developed The eruption of spots occurs from a few days to two or three weeks after the appearance of the primary or herald lesion The outbreak consists of rounded spots and medallions first on the trunk following the lines of the ribs and then on



FIG 107 Pityriasis rosea showing herald spot on shoulder

the adjacent parts of the limbs They may come out in successive crops but the eruption is self limited and after lasting from about four to six weeks the spots fade the scales fall off and the skin resumes its normal appearance without scar or stain Itching is a very variable symptom At times it is severe and may persist with the general eruption for two or three weeks It is exceedingly rare to meet with a second attack in the same subject

Slight pyrexia has been observed and also glandular swelling at the onset

Pityriasis rosea gigantea (Darier) A very rare type in which the patches may cover an area of several square inches The character of the eruption and the course are similar to the common type

The diagnosis is important and mistakes are not uncommon Pityriasis is often diagnosed as syphilis the eruption being taken for the macular syphilide unless itching is present The essential points of difference are the colour the variation in the size of the spots and the scaliness In syphilitic roseola the lesions are dull pink all about one size

and free from scales The scaly and lenticular syphilides are infiltrated and of a dull red colour General enlargement of the glands and affection of the mucous membranes are commonly absent in pityriasis In a doubtful case the Wassermann reaction should be examined

Eczema is excluded by the oval medallion like plaques and the primary patch and distribution of the eruption Seborrhœic dermatitis affects often the same regions but the scalp is usually scaly, and the trunk lesions are covered with greasy squames In the absence of a herald spot it may be difficult to be certain of the diagnosis until the course of the eruption has been noted Seborrhœic pityriasis clears readily under treatment

In psoriasis the spots are a characteristic and deeper colour and well demarcated, there is a silvery scaling and fine bleeding points are found when the scales are removed by scraping Erythema multiforme is distinguished by the purplish tint of the eruption, its predilection for the distal parts of the extremities, and the absence of scaling and of the medallions and the presence of target lesions Occasionally drug rashes (*e g* gold) may simulate pityriasis rosea Here the history may help diagnosis An eruption closely resembling pityriasis rosea in its early stages will sometimes be found in its further development to be lichen planus—so called pityriasiform lichen planus A peculiar brownish purple hue will sometimes suggest this likely development

Prognosis Pityriasis rosea runs a self limited course, and usually lasts from four to six weeks Recurrences are exceedingly rare

Treatment No specific remedy is known Alkaline aperients small doses of quinine or grey powder and sedatives to allay irritation may be helpful Weak tar ointments salicylic acid 2 per cent in an ointment and boric acid ointment are useful or calamine lotion with 2 per cent of sulphur and 2 per cent of phenol All strong or irritant preparations should be avoided

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Psoriasis

(Gk *psoriasis* mangy or scaly)

Definition Psoriasis is a silvery scaling eruption of red, well demarcated lesions mainly affecting the scalp and extensor surfaces of the limbs

Etiology In England psoriasis accounts for 5 to 6 per cent of all skin diseases It is prevalent in all classes of the community and affects males rather more often than females It is rare before four years of age but may arise at any time after that commonly appearing at puberty or less often at the menopause It is rare for a first attack to arise later in life In these later cases an associated arthritis of small and large joints may be present Psoriasis tends to be chronic and relapsing and often shows seasonal exacerbations It is less common in warm sunny climates It is very rare in the negro

The cause of psoriasis cannot be found in any single etiological factor Microbic and parasitic organisms have been repeatedly suggested but no credible evidence has been brought forward to support these views

Dietetic factors have received much attention but their importance is inconstant

For example Schamberg advocated a low protein diet Grutz laid stress on the presence of increased serum cholesterol and phosphatides and recommended the reduction of fats and eggs in the diet Rost in an investigation of glucose tolerance in patients with skin diseases obtained an abnormal curve in 42 per cent of psoriatics It is probable that these may be associated factors but are not constant or significant Van Kerckhoff regards psoriasis as a light deficiency disease having demonstrated a diminution of melanin and pigment cells in the basal layer of the epidermis The naked negro always in the sun rarely gets psoriasis

Various investigators have insisted on the importance of psychological factors Whatever may be the true nature of psoriasis it is helpful to regard it as an inborn peculiarity to react to injury of the skin by psoriasis

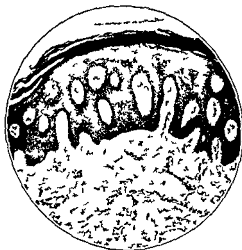


Fig 108 Psoriasis

instead of by the simple inflammatory reaction which would occur in a normal skin This tendency varies and there is no doubt that susceptibility to psoriasis increases at times of physiological instability as at puberty and the menopause Samberger regards psoriasis as the result of a congenital sometimes hereditary weakness or dyscrasia of the keratin forming cells Heredity is traceable in about one third of the cases but little is known of the mode of transmission

Psoriasis may follow such trauma as vaccination dog bites insect bites the puncture of a hypodermic needle scratches of brambles irritation of the skin from constricting clothing and irritant applications an ordinary exogenic dermatitis a burn a boil or irritation from discharges Psoriasis may be seen with the reactions of other diseases of the skin of external or internal origin such as seborrhoeic dermatitis lichen planus intertrigo and less commonly eczema and syphilis

The commonest exciting causes of psoriasis arise from within and act

through the blood stream or sometimes through the nervous system An acute generalised guttate psoriasis may be the sequel of the acute specific fevers influenza, tonsillitis quinsy, or other mild infection Psoriasis may follow accidents operations and nervous shocks or strains In women pregnancy or confinement may provoke a first attack or be the cause of an acute exacerbation Occasionally chronic psoriasis clears during pregnancy Nervous influences particularly in adolescence, must not be overlooked Mental stress and strain aggravate the disorder and relaxations and



Fig 109 Psoriasis

holidays favour remissions this is true of constitutional reactions in general

Major illnesses may cause psoriasis to disappear or they may be responsible for the onset of an eruption in convalescence when the patient has passed the severe stage of the illness and is debilitated

There is much to commend the view that psoriasis is a rheumatic manifestation, the association with infections of the upper respiratory tract, the occasional association with rheumatoid arthritis and more important, its response to varying climatic changes notably exacerbations in the spring and autumn and improvement in warmth and sunshine The tendency of psoriasis to avoid parts exposed to light must have some

significance It is perhaps the dermatological expression of a rheumatic diathesis In general we may say that given a proneness to psoriasis it may be provoked or aggravated by—

Puberty pregnancy menopause
General debility and malnutrition
Nervous debility worry anxiety etc
Infective and other toxæmias
Climatic variations and
Injury to the skin—external or internal

It would seem likely that an eruption with features so constant and characteristic as those of psoriasis would have a specific cause in the skin but no such cause has been found Some dysfunction of the oxidation reduction mechanism of dermal tissues may be conceived Possibly some metabolite produced by various stimuli acting on some organ or body function or some failure of the skin to utilise certain normal metabolites brought to it might explain a specific mechanism determining the specific character of psoriasis but no such mechanism has yet been demonstrated

The toxæmia of chronic gonococcal infections occasionally provokes an eruption keratodermia blennorrhagica (p 238) which closely resembles psoriasis and was regarded as psoriasis by Adamson It is often of the rupioid type though sometimes pustular and there is much to support Adamson s view



Fig 110 Psoriasis

Morbid anatomy The chief histopathological features are capillary dilatation and œdema of the dermis and œdema hypertrophy and thickening of the epidermis The papillæ extend well into the epidermis and the epidermal interpapillary processes are prolonged into the dermis Microscopically the papillæ which have penetrated in cork screw fashion almost to the surface of the epidermis are seen in cross section in a greatly thickened epidermis Leucocytes in large numbers surround the capillaries stream into the epidermis and collect in masses as plumes under the horny layer and are cast off as the dry micro abscesses of Sabouraud Munro in the scales The œdema of the epidermis causes cell division and new cell formation in the Malpighian layer (acanthosis) in addition to the normal cell formation from the basal cell layer and these cells reaching the surface are immature retain their nuclei and are but imperfectly keratinized

(parakeratosis) As a result they adhere instead of being cast off and as they become desiccated air spaces form between the clumps of cells these spaces reflect the light and are partly responsible for the silvery white shining scales of psoriasis, this is emphasised on scratching It is reasonable to imagine that the dry abscesses become ordinary macroscopic abscesses under exudative conditions and produce the clinical state of pustular psoriasis

Psoriasis is entirely a superficial reaction, partly vascular partly epidermal It causes some pigmentation of the part affected and heals leaving little or much temporary discoloration but no scar Psoriasis sometimes causes depigmentation and leaves a leucodermia It does not affect the mucous membranes

Clinical picture The sites of election of the silvery scaling erythema of psoriasis are the scalp elbows and knees and extensor surfaces of the limbs but it may occur on any part of the body It may be confined to the elbows, knees and scalp or it may arise in areas which have been damaged and be co extensive with such injury

Itching is rare though occasionally it may be severe questioned about itching most psoriatics admit some irritation when warm

The erythema of psoriasis is somewhat distinctive and can usually be recognised even in the absence of other features there is an admixture of brown in the red, giving a colour resembling salmon red The lesions are always well demarcated unlike those in most other scaling erythemas The scaling is considerable in the scalp psoriasis is readily felt giving the impression of a miniature mountain range under the fingers by reason of the amount of scale The silvery white character of the scaling readily emphasised on stroking the scale with the finger nail is perhaps the most distinctive element of psoriasis If this scale is removed by scraping the stratum mucosum is reached and is seen as a moist red surface (membrane of Bulkeley) through which dilated capillaries can be seen as red points These are often abraded in the removal of the scale and leave small bleeding points (Plate 20)

All these features the sites of election, the colour silvery scaling the demarcation of lesions the *membrane* of Bulkeley and the capillary bleeding, are peculiarly distinctive of psoriasis and are important aids to diagnosis

The form of the eruption varies widely Commonly an extensive eruption starts as a number of small punctate lesions scattered over the body—generalised punctate or *guttate* psoriasis The guttate lesions may clear spontaneously or respond to treatment and disappear or they may increase regularly to that of coin sized discs *nummular* psoriasis These small discs may be of the same or of different sizes Any of them may further proceed to large discoid psoriasis or to extensive plaques Not uncommonly the lesions spread centrifugally while they clear at the centre *annular* psoriasis these ringed lesions may coalesce and form a *gyrate* or *figurate* psoriasis The description of these numerous varieties of psoriasis should not occasion confusion for the evolution of the pattern is readily understood

In some cases psoriasis is pale and shallow in others it is livid and angry these features often indicating the severity and giving a clue to the

PLATE 20

PSORIASIS

Characteristic patches about the knee. The flat red plaques are covered with silvery scales. One of the upper spots has been denuded of scales to show the vascular surface under it.

[To face p.

probable response to treatment Scaling is sometimes slight sometimes gross and occasionally so severe as to merit the names ostraceous or *rupioid* psoriasis the heaped scales resembling the shell of an oyster or a *limpet*

On the scalp psoriasis is almost invariably an eruption of discrete lesions with normal scalp between the lesions and not a diffuse affection involving the whole scalp an important differentiation from seborrhœic pityriasis capitis When it affects the whole scalp the margins are still well defined The thick hard dry crusts are characteristic

Psoriasis of the face is common in the industrial north but this does not appear to be a general experience Exposure to light probably tends to



Fig 111 Psoriasis annularis

keep the face clear of psoriasis and it may be that the light content of the industrial north of England is less than in the south and that this is responsible for the fact that there is more facial psoriasis in those districts than in other parts of the country On the face the condition tends to lose its normal features and rarely has the characteristic colour or scaling Since the condition is a symmetrical scaling erythema the differential diagnosis from seborrhœic dermatitis may not be possible without reference to lesions elsewhere If markedly erythematous the condition may simulate lupus erythematosus

On the trunk and limbs a psoriasiform eruption in seborrhœic sites is recognised and is probably psoriasis provoked by seborrhœic dermatitis the result being a mixed reaction often resistant to treatment Unlike

ordinary psoriasis, flexor surfaces are in this type affected more than the extensor surfaces and the axillæ submammary regions and umbilicus may be severely involved In the perineum groins and natal cleft this type tends to be very irritating In these sites the characteristic colour and the definition and demarcation of the eruption may still be noted

Psoriasis of the penis especially of the glans penis, may present difficulties, scaling is commonly absent itching is not pronounced and the well demarcated persistent red thickened plaque may be confused with



Fig 11. Gyrate or figurate psoriasis

lichen planus with intra epidermal carcinoma or with erythroplasia of Queyrat

Psoriasis on the hands and feet may assume various forms It may have the ordinary characteristics of the disease but rarely presents much scaling It may be rather acute affecting mostly the dorsal aspects and simulating a toxic erythema or an acute lupus erythematosus and involving particularly the skin about the nail folds and dorsal aspects of fingers and toes This type is sometimes associated with vesication or soddening of the skin in the clefts between the digits On the palms and

soles the condition may be diffuse and chronic giving a general fissured hyperkeratosis of these sites hardly distinguishable from fissured hyperkeratosis from other causes without reference to lesions elsewhere It may occur in these sites as part of a generalised guttate or nummular psoriasis forming small coin sized plaques on the palms and soles which give the impression of infiltration and may be confused with secondary syphilis The presence of psoriatic lesions elsewhere and the absence of other signs of syphilis should establish the diagnosis

The development of a *pustular* phase in psoriasis has been stressed in recent years The phase is uncommon it may be provoked by external irritation (as by chrysarobin) or by internal toxic irritation (as from influenza and tonsillitis), though it sometimes appears spontaneously

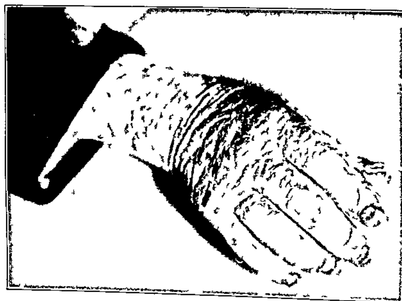


FIG 113 Psoriasis of the hand and nails (See also Fig 3"8)

without obvious cause usually as part of an acute exacerbation The palms and soles tend to be particularly affected and present small pin head or larger lakes of sterile pus both in the psoriasis and apart from the psoriatic lesions these lakes heal and leave small brown spots Similar lakes of pus may be present in patches of psoriasis elsewhere on the body The phase calls for complete rest a search for septic foci and their removal if found and mild local treatment In our opinion this is due to the mingling of an exudative eczematous reaction often of the pompholyx type with a psoriatic reaction

The *nails* are commonly affected in psoriasis A pin point pitting of the nails is commonest and is often best seen when the light is reflected from the surface of the nails This occurs in conditions other than psoriasis *e g* skin reactions such as eczema and general disturbances but its presence with a skin eruption is suggestive of psoriasis Furrowing and striation of nails and white dystrophic patches are common Probably

the most important psoriatic change is a general thickening and opacity of the nail plate with an accumulation of white scales on the nail bed (subungual hyperkeratosis) the change being most pronounced distally and tending to lift and evert the nail An important diagnostic point in distinguishing psoriatic nail changes which sometimes occur without much psoriasis elsewhere, from infection and particularly from ringworm of the nails, is that in psoriasis most of the nails tend to be affected on both hands and feet symmetrically whereas infections tend to involve odd nails

Psoriasis sometimes spontaneously sometimes as the result of irritant treatment, becomes completely generalised, involving every portion of the integument in a *generalised exfoliative dermatitis* In this state the distinctive features including the silvery scaling of psoriasis are lost Like all *generalised exfoliative dermatitis this may be serious and fatal* though most patients eventually recover Without becoming universal and involving every portion of the integument psoriasis may on occasion spread over wide areas, *e g*, the extremities and corset area losing its characteristics and assuming those of a pityriasis rubra in those sites When this happens, the condition is particularly resistant to treatment

Psoriasis arthropathica The association of a very resistant type of psoriasis with rheumatoid arthritis—*arthropathic psoriasis*—is well recognised it is not particularly amenable to gold therapy as might be expected from the good response of the arthritis to this measure The psoriasis here tends to be of the acute livid type and calls for mild treatment The hands and feet are usually involved Rupioid lesions may be present in severe cases and osteo arthritic changes may be marked

Course and prognosis The prognosis varies with the individual To some extent the family history and past history are relevant the general health is probably more significant and must be considered in relation to the patient's work and environment

The prognosis also depends on prompt and efficient treatment of each attack, particularly the first, and on after care Response to treatment and the maintenance of freedom after efficient treatment give some indication of the probable future course but a troublesome phase during puberty and adolescence does not necessarily mean that the patient will be a lifelong sufferer

After a first attack a patient may remain clear indefinitely and perhaps for life More commonly relapses occur sooner or later and the course tends to be chronic and relapsing A few patients have the greatest difficulty in remaining free from the eruption for any length of time

Psoriasis is susceptible to psychological influences and the suggestion that the patient has an incurable affection may materially worsen the course of the disorder On the other hand a confident and efficient management of the attack may dismiss serious consideration of its subsequent behaviour from the patient s mind with beneficial effect

While attacks are common in spring and autumn psoriasis tends to be better in summer and in warm dry climates and worse in winter and in damp, sunless climes Tropical conditions aggravate psoriasis in white subjects and occasionally outbreaks are provoked by ordinary sunlight and by heat

Diagnosis and differential diagnosis In the scalp the diagnosis is readily

made for psoriasis gives the impression of a miniature mountain range under the fingers

Psoriasis must be differentiated from seborrhoeic dermatitis and pityriasis rosea and occasionally from dry scaling patchy eczema and from ringworm Rarely will the distinctive features of silvery scaling salmon red erythema and the definition and demarcation of the lesions fail to stamp the diagnosis of psoriasis The other four affections have none of these features Seborrhoeic affections are most marked on the flexor aspects of limbs whereas psoriasis affects extensor surfaces and pityriasis rosea is generally confined to the trunk not affecting the limbs to any degree In both these affections scaling is slight and pityriasiform (bran like)

Scaling ringworm lesions of the skin are well defined but are irregularly disposed rarely affect psoriatic sites (except the scalp) and do not present the heavy silvery scaling of psoriasis

Patchy squamous eczema has not the silvery scale and the essential lesions of eczema including weeping will often be present

Lichenified circumscribed eczema or lichen simplex chronicus often affects the extensor ulnar borders of the forearms and knees it may be well defined but is intensely irritating more violaceous than red and has a dull surface and not the scaling of *psoriasis*

Lichen planus affecting psoriatic sites may suggest psoriasis If there is no lesion on the buccal mucosa the colour the itching the burnished appearance in reflected light and particularly the infiltration of the lichen papule will usually indicate the diagnosis but the distinction may be difficult

Both secondary and tertiary syphilis may provoke psoriasiform lesions In secondary syphilis a sore throat the presence of lesions on mucous membranes general adenitis and the absence of itching should be noted The eruption will be polymorphic in most cases but the essential feature is the infiltration of the syphilitic papule The Wassermann reaction of the blood is positive In *tertiary syphilis* differentiation may not be so easy Both tertiary syphilis *and psoriasis* tend to form circinate lesions but in the former it is usually *a solitary* unilateral lesion which is infiltrated and tends to *ulceration and scarring* A Wassermann reaction will confirm a *suspicion of tertiary* syphilis in 90 *per cent of* cases and the response to therapy will quickly remove any doubts Reference should be made to the rare disease pityriasis rubra *pilaris which* may closely resemble psoriasis

Treatment While certain guiding *principles* in treatment may be helpful it must be recognised that every case of psoriasis is an individual problem

Psoriasis is not a disabling disease though *it may* be most demoralising The physician should not therefore burden the patient with treatment more troublesome than the disease *unless it is* to good purpose Having apprised the patient of the facts as he *sees* them it is for the intelligent patient to determine the course *of action* but he should bear certain facts in mind as the following

The eruption can generally be cleared in hospital in two or three weeks Clearance gives a *period of freedom* which may be long or short

Neglected *psoriasis may* be a burden and annoyance to others besides the patient

the most important psoriatic change is a general thickening and opacity of the nail plate with an accumulation of white scales on the nail bed (subungual hyperkeratosis) the change being most pronounced distally and tending to lift and evert the nail An important diagnostic point in distinguishing psoriatic nail changes which sometimes occur without much psoriasis elsewhere, from infection and particularly from ringworm of the nails, is that in psoriasis most of the nails tend to be affected on both hands and feet symmetrically whereas infections tend to involve odd nails

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Diagnosis and differential diagnosis In the scalp the diagnosis is readily

Other forms of tar may be used as birch tar (ol rusci) or juniper tar (ol cadi) the latter being particularly good for the scalp Less effective are the cleaner forms of tar e g liq picis carb as in the following prescriptions or the proprietary ether soluble tar pastes (Martindale) or tars dissolved in spirituous solutions

℞ Acid salicyl gr 10	℞ Acid salicyl gr 10
Liq picis carb m 30	Ol cadi dr 1
Hydrarg ammon gr 10	Halden s emulsifying base gr 120
Paraff moll ad oz 1	Paraff moll ad oz 1
Ft ung	Ft ung

Salicylic acid is generally added to these ointments chiefly because of its value in removing scale mercury is also of value as a local application The prescribing of these drugs in an emulsifying base or the addition of such base to the ointment (e g Halden s emulsifying base 25 per cent) is a great asset especially in treating the scalp because it makes it easy to wash the ointment out of the skin or hair

Tar is also used in the form of tar baths (Liq picis carb oz 4 to a 20 gallon bath) which can with advantage be followed by exposure to the ultra violet lamp

Equal parts of liq picis carb and water are useful as a wash for the scalp or as a prophylactic after psoriasis has been cleared with oil of cade ointment

Dithranol (B P) or the proprietary equivalents Derobin (Glaxo) and Cignolin (Bayer) is the modern synthetic equivalent of chrysarobin It has the advantage that it does not rot linen though it stains it lilac it does not stain the hair or seriously inflame flexures or the conjunctiva unless used carelessly

The oxidising or burning qualities of dithranol are greatly enhanced if mixed with mercury tar or salicylic acid but in an ointment the value of the dithranol may in this way be rapidly destroyed If required they should be prescribed separately and mixed immediately before use Though the activity is still enhanced the dithranol is not however destroyed if prescribed (gr 2 to 1 oz) with salicylic acid in Lassar s paste

Such an application rapidly removes psoriasis by burning it off It should be applied exactly to the affected parts and covered The treatment is best conducted in hospital This measure also can be combined with tar baths and ultra violet light and is rapidly effective

Measures suitable for treatment of psoriasis of the scalp have been indicated In addition the regular weekly use of a good spirit or oil or tar shampoo is desirable

X ray therapy is rarely employed in the treatment of chronic psoriasis though it may be of value in treatment of the nails and in some cases where the flexures are involved and when localised lesions are resistant

Grenz ray therapy is not as effective as X rays

After care Regular toilet care of the skin and especially of the scalp is important The use of a pomade with a little mercury and tar and salicylic acid or of a wash with tar may be beneficial

Many patients make an exposure to the ultra violet lamp a part of the daily toilet routine and reduce their susceptibility to attacks Others benefit from phenobarbitone gr ½ daily over long periods

The neglect of psoriasis generally leads to its aggravation and to a worsened prognosis *if only for psychological reasons*

On the other hand a period of difficulty in the management of a case as at puberty or at the menopause—does not necessarily mean absolute chronicity and severity

Most psoriatics find that certain climatic conditions—often warmth and *sun—are beneficial*

Certain employments *e g* mining and those carrying much psychological strain are detrimental

A period of investigation and observation under treatment may *help* the physician to assess what measures if any are likely to reduce the susceptibility of a particular patient to relapses

Psychological factors ultimately play a part in the course of psoriasis *in a majority of patients and depression hinders progress*

These matters are for the general consideration of the patient

From the medical point of view we may say from experience that attention should be given to the general and mental health and any faults should be corrected special attention being directed to the possibilities of focal sepsis, of hormonal imbalance and of nervous instability

There is no specific drug or internal medication of value in *all* cases of psoriasis though there are often indications for symptomatic therapy

In general acute and extensive cases are helped by a course of salicylates and alkalies It is not surprising that some such cases are improved by sulphonamides since they may be provoked by upper respiratory or other acute infections

Chronic and intractable cases may be improved by a course of metallic injections as arsenic or mercury or manganese Mercuric salicyl arsonate gr ¼ to gr 1 or mercolloid (mercuric sulphide) 1 c c intramuscularly, weekly may be given for a course of ten injections Shock therapy—T A B vaccine—is also of value In general chronic cases are often *helped by sedative tonic measures as fractional doses of phenobarbitone* At puberty and the menopause thyroid and hormonal therapy may be *indicated*

Local treatment is of first importance and should be conducted efficiently preferably in hospital or in a dermatological department

The essential of local treatment is probably a process of oxidation or burning and in this tar dithranol and ultra violet light are measures of proven value The production of an active erythema is also a factor

Crude coal tar or Stockholm tar may be painted on the skin and allowed to dry in (Danish method) Or it may be incorporated in an ointment which may be *used alone after a bath or may be used in conjunction* with ultra violet light (Goeckermann s treatment) In this the following ointment is applied at night after a bath this is cleaned off with oil in the morning and the patient is then exposed to the ultra violet lamp a mild erythema being produced —

℞ Acid salicyl gr 10
Pic carb prep gr 20
Zinc oxid gr 120
Paraff moll ad oz 1
Ft ung

PLATE 21



Pustular P oria is

Man a ed 53 Forty years hi tory of psoria i mostly on knees and elbows

[T face p 534

Pustular psoriasis Some cases of very acute psoriasis or psoriasis which has been aggravated by treatment may show small scattered sterile pin head lakes of pus It is probable that in these cases an increased exudation converts the dry abscesses of Munro into fluid abscesses and the change is most readily observed in the palms and soles Attention was first drawn to this feature by Barber and Ingram who suggested that other cases of chronic pustular eruption of this type occurring in the palms and soles in the absence of ordinary psoriasis might be cases of pustular psoriasis Dore had described such cases as a benign form of acrodermatitis perstans of *Hallopeau* Recently Clinton Andrews has shown that a number of these cases are dependent upon tonsillar sepsis and are cured by removal



FIG 114 Psoriasis with pustular lesions

of the focus He terms the condition "pustular bacteride" regarding the eruption as an allergic one (Plate 21)

Similar eruptions are seen associated with ringworm infection of the toes and are recognised as epidermophytide manifestations

A good deal of confusion exists at present but it is probable that the entity of chronic pustular eruption of palms and soles or "persistent pustular pompholyx" may arise from a variety of causes When associated with and a part of a psoriasis eruption search for foci of sepsis should be made and local treatment should be mild since severe reactions may occur (see p 233) If at all acute these cases demand rest in bed and careful general overhaul and treatment

Keratodermia blenorrhagica

(Gk *Keras atos* horn *blennos* mucus)

A symmetrical eruption of wax like rupioid psoriasiform lesions usually associated with arthritis of gonorrhœal type This very rare condition was first described by Vidal A few instances have been recorded in France The first case recognised in this country was reported by Sequeira in 1910 (Plate 22)

The patient was under the care of Dr F J Smith suffering from gonorrhœal arthritis and periarthritis of the right knee right elbow and right sterno clavicular articulation The left knee was also slightly affected The man was in a very cachectic condition anæmic and wasted The urethral discharge had ceased after a few days treatment with sandal wood oil before the patient was admitted to hospital The cutaneous condition was remarkable Along the inner border of each foot was an irregular horny mass with a nodular surface Smaller masses were present

along the outer side [illegible] the intervening areas were [illegible] with yellowish-brown [illegible]-like thickening of the epidermis. The nodules were [illegible] lines embedded in the skin. The individual swellings measured [illegible] centimetres across. The masses [illegible] range on a small scale a description which has been given by [illegible] a thorn. Although most often met on the soles, the excrescences extend towards the dorsum of the foot on both inner and outer aspects. The area affected was sharply defined by a narrow zone of hyperaemia. With the exception of small fissures at the base of the great toe the digits were free. The lesions felt like horn and no fluid could be withdrawn on puncture.

The nodules were covered with a thick horny cap, and the stratum granulosum and Malpighian layers were infiltrated with neutrophile leucocytes. There was also some oedema of the papillary layer with lymphocytic infiltration and plasma cells about the vessels. It may be remarked that the histological picture resembles that of pustular psoriasis.

Under treatment by gonococcus vaccine the arthritic lesions subsided and the carapace on the soles peeled off in large masses, leaving reddish brown stains, the whole duration of the keratodermia being about three months. This appears to be the usual course. In some instances the palms are also affected, but usually to a less extent than the soles. The disease is usually met with in grave gonococcal infection with severe arthritic and general symptoms. Jacquet described a case in which three successive attacks of gonorrhoea were followed by keratodermia and articular disease. Lesions of similar type have been seen rarely in patients with severe acute rheumatoid arthritis in whom there has been no evidence of gonococcal infection. The eruption may be widespread and pustular.

Parapsoriasis

Under this name are included three types of chronic psoriasiform and lichenoid eruptions. Nothing is known as to their causation and the name must not be regarded as indicating any relationship to psoriasis. Their essential features are eruptions of various types but always erythematosquamous; they are persistent and may last throughout life and are highly resistant to treatment. The parapsoriases are very rare and generally appear first in early adult life.

Pathology. Vaso-dilatation, oedema and some lymphocytic infiltration of the dermis are present and these are associated with parakeratosis and oedema of the epidermis.

Clinical features. (1) *Parapsoriasis en gouttes* (Brocq). Pityriasis lichenoides chronica. The eruption involves the trunk and limbs. The individual lesions are macules up to a centimetre in diameter, often covered with a fine adherent scale. They may become confluent and vary when observed over long periods.

Pityriasis lichenoides chronica presents an eruption of small maculo-papules, many having a central scale readily detached entire by the finger nail, leaving a red flat surface. It may be a separate entity. The eruptions recur at intervals and in very rare instances there may be haemorrhage and necrosis with the formation of scars resembling small pox. Such lesions suggest a papulo necrotic tuberculide and may also be apparent

PLATE [illegible]



KERATODERMIA BLENNORRHAGICA

[To face p 39

along the outer side of each sole and the intervening areas were covered with yellowish brown parchment like thickening of the epidermis The nodules were of a dark brown or purple brown colour aptly likened to sloes embedded in the skin The individual swellings measured 0 3 to 2 centimetres across The masses as a whole closely resembled a mountain range on a relief map a description which has been given by French authors Although most developed on the soles the excrescences crept towards the dorsum of the foot on both inner and outer aspects The area affected was sharply defined by a narrow zone of hyperæmia With the exception of small nodules at the base of the great toe the digits were free The lesions felt like horn and no fluid could be withdrawn on puncture

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in a type of the eruption which has been described as *pityriasis lichenoides et varioliformis acuta*. In this variety in addition to the small scaling erythematous spots there are papules (2 to 5 mm. diam.) which may be capped by vesicles and commonly undergo necrosis leaving varioliform scars. The trunk and limbs are affected and the eruption, which is most often seen in children, may occur at any age. This acute type may run a definite course with mild fever and closely simulate varicella.

(2) *Parapsoriasis en Plaques* (Brocq). Here the eruption takes the form of yellowish red patches of discoloration, rounded or irregular in shape and covered with a fine scaling. The lesions vary in size from a finger print to a hand, and they affect the trunk and proximal parts of the limbs. (To this type Radcliffe Crocker gave the name *Xantho erythrodermia perstans*.) Occasionally the colour may be bluish or grey and the eruption may have a coarse reticular pattern. The lesions may be macular or thickened like psoriasis. Milian, Civatte and Ingram have seen this type develop mycosis fungoides tumours, with gross enlargement of isolated lymphatic glands.

(3) *Parapsoriasis lichenoide* (Brocq). *Parakeratosis variegata* (Unna *et al.*). *Lichen variegatus* (Crocker). Here the eruption consists of a yellowish red lichenoid network, particularly affecting the extremities but also involving the trunk. The lesions are often capped with a fine scale but the meshes of the network are of normal skin. This type has also been seen to pass on to mycosis fungoides.

Prognosis. The characters of the eruption may be constant for years or may undergo variations, parts clearing up entirely independently of treatment. Except in the types indicated there is no atrophy.

Diagnosis. Parapsoriasis may closely simulate psoriasis and may not be suspected until its resistance to treatment becomes obvious. The scalp, however, is not affected in parapsoriasis, the scales are not so silvery and the removal of the scale does not disclose the characteristic membrane of psoriasis. Lichen planus is excluded by the absence of itching and of mucous membrane lesions and its characteristic lilac or violaceous colour. Secondary syphilis is excluded by the absence of infiltration in the lesions, involvement of the mucous membranes and general adenitis. Some seborrhoides may be simulated by the plaque-like eruption, but the resistance to treatment is characteristic of parapsoriasis. It is possible that some types are premycosic, and this possibility must be borne in mind.

Treatment of Parapsoriasis. The only measure which has had a degree of success and in some cases cure is the application of Thorium X in a collodion base (1,000 e.s.u. per c.c.). This is painted on the affected areas and allowed to dry. The patches gradually fade and disappear. If extensive areas are treated there may be a temporary malaise.

"Dermatitis colonica" (Whitfield) is a persistent eruption on the thighs and legs resembling parapsoriasis, apparently due to the presence of streptococci in the bowel and a considerable reduction or absence of *B. coli*. The correction of this abnormal flora may clear the eruption, but the clinical appearance is not unlike "crazy pavement" skin (Figs. 41 and 42) and vitamin therapy may be effective.

CHAPTER XIII

TOXIC ERUPTIONS INCLUDING THE ERYTHEMATA

Erythema Multiforme Erythema Nodosum Granuloma Annulare
Lupus Erythematosus Urticaria Purpura Schamberg's Disease
Poikiloderma

ERYTHEMA

Definition Erythema simply means redness of the skin the word being derived from the Greek word for a blush and the term may be used for any lesion of the skin showing hyperæmia with or without œdema and infiltration Being due to dilatation of vessels the redness disappears on compression thus differing from purpura and since redness is one of the cardinal features of inflammation erythema is an early and constant sign of dermatitis or of any inflammatory reaction involving the skin Dilatation of the capillaries due to vasomotor disturbances produces erythema without inflammation

Method of Production According to Lewis the vasodilatation resulting from local tissue damage is due to the action of H substance a metabolite produced on the spot and it is thought that circulating toxins usually act indirectly upon the vessels by the local production of this substance Further recent work suggests that active vascular dilatation through nerve stimulation also occurs by chemical means the ultimate stimulus presumably being H substance again That erythema (active capillary dilatation) can be of nervous origin is certain *e g* the emotional blush and the flushed face of a patient with rosacea after a hot drink and Stricker in 1876 was able to produce erythema of the skin of the limbs by stimulating the cut end of a posterior root of a spinal nerve

Essential causes of erythema These fall into three *main groups* —

(1) *Noxious agents of physical* chemical or biological nature affecting the skin from without or from within

(2) Idiopathic causes presumably toxic metabolic hormonal or of obscure origin *e g* erythema læve in renal œdema (p 97)

(3) Nervous causes functional or organic

Classification The erythemata have been classified as primary or secondary idiopathic or symptomatic the secondary or symptomatic varieties being manifestations of specific fevers infections or constitutional disturbances *In spite* of the fact that the etiology of some erythemata is obscure it is most helpful to consider the subject on an etiological basis since that is essential in treatment There are localised and generalised varieties As a rule localised asymmetrical erythema is due to infection or to injury from *without* and the symmetrical and generalised eruptions are due to causes acting from *within* Because erythema is the earliest visible sign of reaction to external irritation its origin from this cause is generally obvious

GROUP I Erythema due to external causes

(1) Mechanical Erythema traumaticum Page 291
(2) *Heat*

Erythema ab igne Page 306

(3) *Cold*

Frost bite Page 301

Livedo reticularis Page 304

Erythema pernio Page 303

Acrocyanosis Page 303

Erythrocyanosis cruris Page 303

(4) *Ultra violet light*

Erythema solare Page 308

(5) *Radiodermatitis* Page 315

(6) *Chemical dermatitis* Page 319

(7) *Biological*

Animals insects plants bacteria etc

GROUP II Erythema due to internal causes

(1) *Infections*

General infections Erythema occurs in a number of general infections and is here regarded as symptomatic The erythema may be local or general and as in many conditions the presence of the infecting agent has not been demonstrated in the skin lesions it is probable that many such eruptions are toxic in origin This group therefore makes a useful introduction to the study of the erythemata of obscure origin and many analogies will be observed As the cause, whether toxic or infective comes from within the resulting lesions are likely to be symmetrical but it must be remembered that areas of skin exposed to cold, heat light or any form of irritation may be more reactive and produce anomalous patchy or asymmetrical eruptions Similarly, since the erythematous response depends upon intact vascular and nervous mechanisms lesions of vessels or nerves may account for a perplexing picture These observations apply to all erythematous eruptions however produced

Localised erythema or small erythematous macules occur in the following systemic infections with viruses bacteria or protozoa Cerebrospinal meningitis typhoid chicken pox small pox dengue leprosy malaria syphilis and tuberculosis amongst numerous others

Generalised erythema or erythema in sheets occurs in scarlet fever measles, German measles and more rarely in acute rheumatism Many of the above conditions may be recognised by characteristic lesions which develop quickly from the initial erythematous macule but scarlet fever is closely imitated by a number of widely spread erythemata of drug or presumably of toxic origin See erythema scarlatiniforme (p 249)

(2) *Toxins*

Toxic erythema from drugs foods and intestinal toxaemia A list of the common drugs causing erythema is given on page 283 and the view is expressed that many if not all of the eruptions are not due to the drug itself, but probably to some secondary toxic cellular product and this explains why many drug eruptions have exact counterparts in certain toxic rashes For instance in cases of arsenical dermatitis the first lesions may appear on the flexor aspects of the forearms as erythematous macules which irritate The erythematous rash spreads symmetrically on the arms and then affects the face and neck and later may involve the trunk and lower

limbs In severe cases the erythema becomes universal and shows a tendency to desquamate early which helps to distinguish the condition from scarlet fever (*vide* secondary erythrodermia p 275)

Another less serious eruption sometimes arises on the ninth or tenth day after the first injection of arsenic in the treatment of syphilis Milian called it *Erythema of the ninth day* and it appears as a rapidly spreading scarlatiniform or morbilliform eruption with little irritation The rash lasts but a few days there is no desquamation and it does not recur with further arsenical treatment

The sites affected by the arsenical eruption are often those of other toxic rashes which also may involve the trunk upper arms and thighs instead Erythematous toxic eruptions present a variety of lesions from the large sheets of scarlatiniform type through smaller macular lesions of different size and shape to minute pin head spots Sometimes the eruptions are slightly œdematous and might reasonably be regarded as urticaria but this distinction between toxic rashes is of no practical importance Toxic rashes usually erupt quickly and begin to fade in a few days leaving brownish macular staining and slight desquamation as a rule Some irritation is usually present and may precede the eruption and since the skin reaction is but a manifestation of a general intoxication there may be malaise vomiting diarrhœa slight fever and joint pains

Apart from drug eruptions and the rashes associated with general infections already mentioned the following are common causes of toxic rashes —

(1) Certain *foods* such as shell fish mushrooms tinned meat or fish and acid fruits e g strawberries and plums etc Small seasonal epidemics of toxic eruptions occur when certain foods are plentiful and diagnosis becomes increasingly easy

(2) *Intestinal toxæmia* cannot be disputed when a rash follows vomiting diarrhœa or both and the well known enema rash is ascribed to increased absorption of toxic fæcal products So in the absence of other causative factors one often has to assume that the toxin is an alimentary one and successful treatment with aperients antiseptics and absorbents (charcoal and kaolin) seems to justify this assumption Hydatid or tapeworm infection may also account for a toxic erythema

Certain types of toxic erythema exhibit peculiar features and upon these special clinical varieties have been established The two best known are erythema multiforme and erythema nodosum

Erythema multiforme Erythema exudativum (Erytheme polymorphe)

A toxic eruption characterised by erythematous patches of various shapes patterns and sizes accompanied by serous exudate producing elevated lesions and frequently vesicles and bullæ

Etiology Erythema multiforme is most common in children and adolescents and shows a seasonal incidence in spring and autumn The causes are those already enumerated for toxic eruptions but E multiforme is rarely due to foods and drugs but to bacteria and their toxins and antitoxins Some regard it as evidence of a rheumatic infection because

it is at times *associated with acute rheumatism* and at other times with arthritis endocarditis chorea and tonsillitis but its etiological basis is obviously broader than that Not infrequently the eruption appears without symptoms in a healthy subject and no cause can be found

Pathology The essential changes may be explained by the action of circulating toxins upon the small vessels or upon the nerves controlling them resulting in dilatation and exudation of plasma, the latter causing œdema of the prickle cell layer and forming vesicles or blebs at various levels in the epidermis A cellular infiltration is most marked about the dilated vessels and may reach the deepest layers of the corium and also invade the epidermis making the vesicles and blebs cloudy and purulent Erythrocytes may escape from the vessels and colour the lesions

Clinical features *General* Sometimes the eruption appears without any *general disturbance but usually the onset is marked by malaise and a* slight degree of fever Pain and swelling of the larger joints may occur, also sore throat vomiting and diarrhœa but the more severe constitutional symptoms often denote the presence of some definite infectious disease

Local The eruption usually appears suddenly and is symmetrical It commonly affects the dorsal surfaces of the hands and feet the extensor surfaces of the arms and legs the knuckles wrists and knees and at times the face and neck Other parts may be involved and not infrequently the mucous membranes of the lips tongue cheeks conjunctivæ, prepuce and pharynx show red macules papules vesicles and superficial erosions

The simplest lesions are dark red macules round or oval and sharply defined Exudation produces papules or raised plaques and vesicles or bullæ may arise later Although all these forms are often found together usually one type of lesion predominates and this accounts for a number of names which are merely descriptive

Erythema papulatum refers to a variety presenting dome shaped papules about 0 5 cm in diameter Larger nodular forms occur and have been described as E tuberculatum or E tuberculosum confusing terms best avoided

Erythema circinatum describes ringed lesions having a pale centre and *a red margin which may be narrow* vivid *and raised presenting* a striking appearance The coalescence of two or more rings produces gyrate patterns termed E figuratum

Erythema iris (Gk *iris*—rainbow) is a variety characterised by concentric varicoloured rings resembling a target (Plate 23) The centre varies in colour from rose pink to purple and may be vesicular or hæmorrhagic Around this occur two or more zones alternately dark or pale The usual size is between ½ to 3 cm This variety is perhaps *the best known* because recurrences are quite common and may be frequent *Erythema vesiculosum* and *E bullosum* are self descriptive *Erythema purpuricum* is *a more severe* toxæmia in which hæmorrhages occur into the erythematous spots or central blebs and one of Sequeira s patients had hæmaturia at the same time *E herpes iris* has a peripheral ring of vesicles

Course and prognosis The disease runs an acute course of one to four weeks and leaves no trace on the skin although some desquamation or pigmentation may persist temporarily Recurrence may occur particularly in the iris type sometimes for ten to fifteen years



ERYTHEMA IRIS

The patient (female aged 28) had had eight attacks in two years There were vesico bullous lesions in the mouth



Diagnosis This is not difficult as a rule for the slight prodromal symptoms and the sudden appearance of the circumscribed red patches on the extremities with little irritation are very suggestive Soon the variations in the pattern and colour tones of the lesions make the multiform character obvious

Acute lupus erythematosus may simulate very closely the red macular type but the former eruption most commonly affects the central part of the face and the fingers the lesions are dull scaly purplish and uniform in type and are very persistent (page 255) Urticaria resembles the papular and œdematous types which histologically are urticarial reactions but nettle rash is common enough to be well known its lesions are very uniform transitory less erythematous and more irritating (page 257)



Fig 115 Erythema bullosum

Tinea circinata is differentiated from the circinate and annular erythemata by its scaly edge which is made up of vesicles and pustules and so rarely has a uniform smooth rounded edge In cases of doubt microscopical examination of scrapings of the edge for the presence of fungus should be made (page 395)

Dermatitis herpetiformis and pemphigus may be closely imitated by the bullous varieties of E multiforme but as these are very chronic conditions as a rule time eliminates doubt (page 645)

Treatment The first essential is to consider every possible cause and by careful enquiry and examination to eliminate a food drug or inflammatory origin When associated with bacterial or protozoal infections general treatment is merely for those *e g* quinine for malaria and in rheumatic conditions salicin and salicylates In cases of obscure etiology or if gastro intestinal symptoms are present alkalies aperients intestinal antiseptics and adsorbents should be tried and a protein free diet *e g* mist alba hydrarg cum cret gr i t d s and medicinal kaolin or charcoal Warm alkaline baths are helpful

Local treatment consists of the application of cooling and sedative lotions such as calamine with liq plumbi subacet fort ♏v to an ounce or liq picis carb ♏x glycerine ♏xxx to one ounce of liq plumbi subacet dil

Chronic forms of erythema A number of chronic eruptions closely

resembling the circinate forms of erythema multiforme appear to have received different names from different observers

Erythema annulare centrifugum of Darier is usually seen as large rings with smooth pink cord like edges which slowly move in a centrifugal manner and occasionally one can observe the lesions evolve from a papule which resolves in the centre and spreads peripherally The eruption may last six months or more *Erythema chronica migrans* is a similar ringed eruption with a larger pattern but as some of these cases have been sequelæ to insect bites they may be infections of the skin

Erythema figuratum perstans or erythema gyratum perstans refers to very similar conditions but usually the edges of the lesions are broader and flatter and the lesions themselves more numerous

Granuloma annulare (page 247) is probably allied to these chronic ringed eruptions although its edge is more papular like the lesions of *erythema elevatum diutinum* of Radcliffe Crocker and Campbell Williams (page 249)

In general it is thought that all these eruptions are of toxic origin having the same *etiological factors as erythema multiforme* but their response to treatment is much less satisfactory Whether these conditions *are clinical entities is still a matter of controversy in dermatological circles*

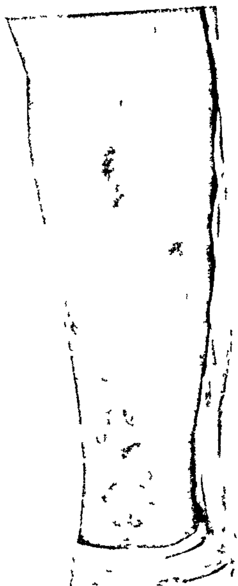
Erythema nodosum

This may be defined as a toxic eruption characterised by the formation of symmetrical nodular erythematous swellings on the shins or extensor aspects of the limbs

Etiology It is thought by many to be a variety of erythema multiforme but this is anomalous since the lesions are of a solitary and constant type and clearly represent a pattern of allergic reaction to organisms *in situ* or to drugs or toxins carried by the blood stream There are many recent references in the literature to its association with tuberculosis and some authorities regard it as essentially a tuberculous manifestation Goldsmith reviews the evidence and concludes that although a tuberculous infection gives rise to erythema nodosum the eruption is not essentially a tuberculous manifestation Similar eruptions in fact are seen in acute fevers and especially with streptococcal and meningococcal infections and have followed the ingestion of drugs notably iodide bromide and antipyrin Moreover Sequeira reported that 20 per cent of his cases of *E nodosum* were associated with rheumatic fever so that the only common factor in these associations is a toxic one and a specific infective cause is improbable Like E multiforme the disease is more frequent in the spring and autumn females between ten and thirty are most commonly affected Lendon looked upon *E nodosum* as an acute specific disease and coined the name nodal fever to describe it

Pathology This is essentially similar to that of E multiforme but the whole thickness of the skin and subcutaneous tissues are involved Cellular infiltration and exudation are more marked and red blood cells or actual hæmorrhages are frequently present The latter account for the staining which is apt to mark the site of resolved lesions

PLATE 24



ERYTHEMA NODOSUM
Both legs were affected

PLATE

GRANULOMA ANNULARE

[To face p. 4

Clinical picture *General* The onset of the eruption is preceded by malaise gastro intestinal disturbances fever and joint pains of rheumatic type These symptoms may be slight or severe with hyperpyrexia rigors and delirium which are fortunately rare

Local The eruption is symmetrical and appears abruptly most often about the middle of the shins occasionally below the elbows and rarely on the thighs upper arms and face The skin lesions are acute inflammations being red swollen hot painful and very tender to touch they are oval or round slightly dome shaped with a tense shiny surface Evolution is rapid and in twelve to twenty four hours the colour may be fading and the tenseness gone but the node can be seen and felt for a week or more and some staining and slight desquamation mark the site for several weeks New crops may appear and prolong the disease Ulceration never occurs and eventually nothing remains to bear witness to the attack Recurrences are rare (Plate 24)

A noteworthy feature of the erythema nodosum of meningococcal origin is the profuse character of the eruption its involvement of both arms and legs and often of other parts of the body as well The individual lesions are small but otherwise identical with the common type The organism can be recovered from the nodes The eruption responds immediately to sulphonamide therapy

Diagnosis This is easy as a rule The symmetry rules out acute local infection such as erysipelas cellulitis or abscess and at the same time the acute inflammation marks it from the granulomata Erythema induratum *q v* is chronic relatively painless and often ulcerated Evidence of tuberculosis should be sought

Treatment Complete rest is essential with the diet and nursing of a fever Quinine aspirin salicin and alkalies may be found useful Blood cultures should be taken during pyrexial phases and penicillin or sulphonamides given in adequate doses if indicated and we have seen dramatic recovery follow their use Local measures are limited to the application of cooling lotions such as lotio plumbi or aluminium acetate 2 per cent

Granuloma annulare

An eruption occurring on the extremities and occasionally elsewhere characterised by small papules arranged in rings which after running an indolent course disappear spontaneously (Plate 25)

Etiology The patients are usually children or young adults The cause is unknown but the reaction is probably a toxic or allergic one and the lesions are obviously related clinically to the chronic circinate erythema group including erythema centrifugum and erythema elevatum diutinum

Pathology The characteristic changes are in the middle layers of the cutis where nodular areas of coagulation necrosis surrounded by a peripheral wall of infiltrate consisting of epithelioid cells and lymphocytes occur These cells are thickest near the area of necrosis The collections of epithelioid cells are either separated by radial strands of collagenous fibres or lie embedded in them The elastic tissue has vanished in the affected areas Changes in the blood vessels are slight

The epidermis shows hypertrophy of the Malpighian layer with numer

ous mitoses and some œdema and parakeratosis Similar features are seen in the nodules of rheumatoid arthritis and in other allergic lesions (Collins 1937)

Clinical appearances The eruption consists of skin coloured papules and is *particularly* distributed over the backs of the fingers and hands toes and feet and the extensor surfaces of the elbows and knees It occurs sometimes on the thighs buttocks breasts or face indeed in all the sites of the toxic erythemas Sometimes there is a lilac hue about the margins of the papules or rings and the skin within the rings may give the appearance of slight atrophy though actual atrophy does not seem to occur These superficial lesions are obviously in part dependent for their characters upon the œdema associated with the

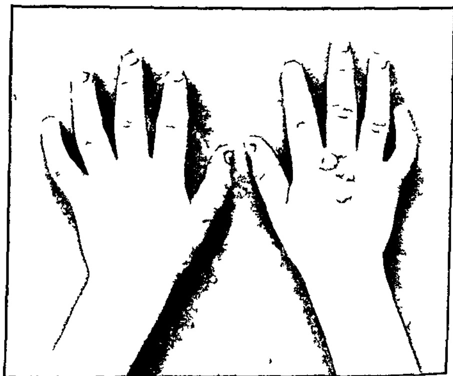


Fig 116 Granuloma annulare

reaction and sometimes rest in bed will cause a considerable collapse of the œdema shown by a gutter round the summit of a ringed lesion after such rest The ringed lesions are sometimes associated with infiltration in the deeper dermis or subcutaneous tissue but not involving the epidermis and they may thus simulate a sarcoid or tuberculous type of infiltration

The clinical appearances may last from a few months to twenty or thirty years and variations occur disappearance and reappearance depend upon the patient's general health Although the condition is most common in children and young adults it may occur at any age and one of our patients in her seventh decade developed a large lesion across the front of the neck and a biopsy established the diagnosis

Diagnosis *The lesions of granuloma annulare are* usually mistaken for tinea circinata by those unfamiliar with the characteristic features The scaly vesicular or pustular edge of ringworm is quite unlike the

smooth unbroken and often uninflamed skin which appears to overlie the pseudo cartilaginous ring of granuloma annulare In fact the lesions of the latter are so characteristic that once seen they are rarely forgotten Some of the chronic circinate or annular localised erythemata may closely resemble granuloma annulare but since the conditions are probably related the distinction is of no practical importance Occasionally sarcoids present a similar raised pattern but the colour tones are deeper in red and brown We have seen a case of granuloma annulare which was thought to be cutaneous Leishmaniasis and was investigated by pathologists in Egypt and London before being sent to a dermatologist who recognised the familiar lesions at once

Treatment There is no specific treatment for granuloma annulare but any underlying cause of toxæmia should be sought though none may be found Treatment is essentially symptomatic and should be directed towards raising the patient's resistance to infection Locally fractional doses of X rays (50 to 100 r) or occlusive dressings such as elastoplast cause a temporary or permanent disappearance of the eruption

Erythema elevatum diutinum Several cases have been recorded of an interesting and rare eruption of raised persistent nodules beginning sometimes about the knees and extending to the elbows and buttocks and finally to the hands The lesions are convex raised well defined smooth purplish red and tender They usually have a circular or oval outline and are somewhat symmetrically arranged Itching and tingling of the spots have been recorded Histologically the eruption is a *chronic* inflammation of the dermis about the sweat glands the corium being the seat of a fibro cellular infiltration The nature and relationships of the condition are unknown but the condition may well be a deeper *coloured* variant of granuloma annulare and no disadvantage is likely to accrue if it is regarded as such

Erythema scarlatiniforme When discussing the types of toxic erythemata mention was made of patchy scarlatiniform *eruptions* but this variety is regarded as a clinical entity and bridges the gap to the so called erythrodermias As the name infers this *eruption* closely resembles that of scarlet fever

Etiology The cause is often obscure but may *include* those causes mentioned for the toxic eruptions interesting examples being quinine by mouth mercury by inunction iodoform by *local* application various infections and even enemata

Clinical features Constitutional effects depend *upon the essential* cause if this is an infection malaise and moderate fever usually precede the eruption by a day or two but *in other* cases the eruption is the first sign It is sufficient to say that the rash *is often* indistinguishable from that of scarlet fever but less *extensive* Desquamation appears early by the second day in some instances Subacute and recurrent varieties occur and sometimes the scaling is gross casts of the hands and feet being shed and rarely the nails and hair too

The course is short the rash disappearing in twenty four hours or lasting up to a week and sometimes *continuing* as an exfoliative dermatitis If recurrent subsequent attacks tend to be less severe

Barber and others have put forward the view that lupus erythematosus *is caused by focal infection with haemolytic streptococci* the foci being at the roots of the teeth in the tonsillar crypts nasal sinuses the prostate or intestine However, it is unusual to find that the removal of such a focus cures lupus erythematosus

The obscurity of its cause and the partial or complete lack of resis*tance to infection and toxaemia suggests* some profound deficiency, possibly in relation to a defective response of the reticulo endothelial system



Fig 110 Lupus erythematosus Buccal mucosa and lips affected

The lesions may be allergic reactions dependent upon various factors relating to infection and immunity

Ultra violet light is a potent factor exposure to sunlight nearly always aggravates and sunburn may initiate the eruption of lupus erythematosus We have *seen an extensive actinic dermatitis* of the whole face a vast area of neck and both arms replaced by lupus erythematosus in a young woman

Pathology Lupus erythematosus is a peculiar form of inflammation of the skin beginning in the vascular layer about the sebaceous and sweat glands, and sometimes around the follicular orifices There is hyperaemia of the corium and later cellular infiltration about the vessels The



LUPUS ERYTHEMATOSUS

Duration seven years. The butterfly patches are characteristic. Their centres are atrophic and the margins scaly. Recently the disease has appeared on the trunk and extremities.

infiltration consists of round cells mast cells and plasma cells and occasionally giant cells have been observed Finally the infiltration undergoes cicatricial changes leading to destruction of the glandular elements of the skin including the hair follicles The tubercle bacillus has not been found in the tissue

Clinical features The lesions are erythematous and follicular The former consist of flat red spots of various sizes with a dry and smooth or a scaly surface There is sometimes some elevation above the level of the surrounding skin In the follicular type there is hyperæmia at the margins of the patch the centre of which is covered with an adherent scale which finally may become of a greyish or yellowish colour This scale is difficult to detach and when removed a surface is exposed in which the dilated orifices of the glands are easily seen On the under surface of the scale there are conical plugs which occupied the dilated gland orifices Adjacent to the lesions small groups of follicles often show coarse yellowish plugs which are of diagnostic value In very rare instances the lesions may be nodular (Radcliffe Crocker) The patch tends to extend at the margin and to heal in the centre leaving a slightly depressed scar The progress of the disease is always slow and it may persist for years Occasionally the inflammatory process clears up spontaneously and if of the superficial type may leave very little cicatrix (Plate 26)

The seat of election is the face usually the cheeks and the bridge of the nose where the lesions form a butterfly patch (Fig 118) The eruption commonly starts as isolated symmetrical patches on the cheeks but sometimes begins on the nose and spreads outwards from it It frequently attacks the scalp the patches at first being red and scaly and ultimately areas of smooth scar devoid of hair and surrounded by a narrow margin of redness covered with adherent scale In rare instances the scalp is attacked first The auricles are frequently affected and the cicatricial contraction may lead to considerable deformity The backs of the hands and the fingers are also commonly involved the lesions closely resembling chilblains but they do not clear up in the warm weather Exceptionally lesions of the common type occur on the trunk the most frequent site being the shoulders and the limbs Such cases are sufficiently common to be classed as chronic disseminated lupus erythematosus In most cases the eruption is worse in the winter and spring but this is not always the case

The appearances vary somewhat in different types In some there is excessive formation of scale and massive crusts develop in others the scaling is confined to a narrow ring round the slowly spreading scar In the more superficial forms the scaling is very slight and the resemblance to erythema is very close

The mucous membranes are affected in 30 *per cent* of the cases the red margin of the lips being the most commonly attacked Next in order of frequency come the buccal *mucosa* the palate and nasal cavity Patches of lupus erythematosus of the lips often have the appearance of a dried layer of collodion while on the buccal *mucosa* the lesions are symmetrical white patches usually with a red margin They sometimes leave whitish cicatrices (Fig 119) A poor *peripheral* circulation vasomotor instability dead fingers and chilblains commonly precede and accompany this

type of lupus erythematosus and would appear to predispose to the disease when it affects the nose tip and lobes of the ears

Complications Epithelioma is the only serious complication of the chronic cases It is very rare and exceptionally there may be multiple cancerous tumours X ray treatment may have been the exciting cause of the malignant growths and it is contra indicated in any case

Polyarthritis as in other toxic affections is fairly common

Diagnosis Lupus erythematosus is characterised by its symmetry and superficial character, by its marginal extension and the cicatricial destruction of the skin and its appendages It, however simulates very closely a number of conditions at its onset and in some cases the progress has to be watched before a definite diagnosis can be made The diseases resembling the early stage of lupus erythematosus are chronic eczema psoriasis, acne erythema and chilblains

From lupus vulgaris the diagnosis is generally easy The eruption usually starts at a later age, it is symmetrical and there are no apple jelly nodules Ulceration is also exceedingly rare The only form of lupus which can lead to a mistake is the superficial type described by Vidal affecting the cheeks and nose and in which the nodules are very small

Very rarely lesions of lupus vulgaris and lupus erythematosus occur together as in a patient shown by Barber

Prognosis The present outlook appears to be that 30 per cent are cured a similar percentage improved and about 40 per cent are more or less refractory to treatment

Treatment of chronic lupus erythematosus Septic foci should be eliminated if possible Exposure to bright light must be avoided especially during treatment with sulphonamides or gold Sulphanilamide sulphapyridine, sulphathiazole or sulphamethazine may be tried in doses of 0 5 gm t i d for one week and then b d for six to eight weeks unless contra indicated by the patient s reaction or leucopenia If this fails gold therapy should be tried intramuscular or intravenous injections being given weekly for three months beginning with the smallest available doses Intramuscular bismuth or quinine bismuth iodide is a useful alternative to gold and less dangerous Suramin 0 5–1 gm intravenously weekly sometimes succeeds It was thought that penicillin would be of great value in the many cases of lupus erythematosus which appear to be allergic responses to streptococcal infections We have used the drug systemically in doses totalling 1 to 2 million units and while some cases showed considerable improvement others were unaffected and none was cured These results are in agreement with the failure of full doses of the sulphonamides The occasional success of a prolonged course of necessarily smaller doses may depend upon a carrier state in which the causative organisms are not destroyed by intensive treatment but if inhibited long enough may allow the sensitised skin to recover

Calciferol in doses of 100–150 thousand units daily has been tried in cases thought to be tuberculous and some improvement was noted but the outlook with this drug appears to be no better than with the sulphonamides and penicillin

If general treatment fails to clear the lesions they may be treated with carbon dioxide snow for 10–15 seconds or lightly painted with liquid

phenol This local treatment merely hastens the atrophy which arrests the disease Lotio calaminæ is cooling and protects the lesion from light X ray therapy usually acts like ultra violet light in aggravating the eruption and is not advised

Acute Disseminated Lupus erythematosus

Etiology The patients are usually young women and between fourteen and thirty years of age In two thirds of the cases there was clinical evidence of tuberculosis—affection of the glands scars of gland abscesses or phthisis It has been held that lupus erythematosus of this type is a tuberculous exanthem and there is some evidence in favour of this view though cases are met with in which tuberculosis appears to be definitely excluded There was a family history of tuberculosis in 80 per cent of Sequeira s patients In many instances no exciting cause can be found but there are several instances on record in which the eruption started apparently as the result of mental or moral shock The non tuberculous origin of some cases must not be overlooked and we recognise that in one grave type of the disease there is more commonly a streptococcal origin Such cases are attended with high fever and evidence of grave toxæmia

The acute affection is rare and occurs particularly in young females already suffering from the disease of the chronic type but occasionally it may run an acute course from the onset (Pernet) Sequeira saw a patient with a very acute outbreak There were signs of bronchitis in the chest and the young woman died the autopsy revealing extensive tuberculosis of the lymphatic glands There was a single fibrous focus in one lung In other cases there was no evidence of tuberculosis the greatest care being taken at the post mortem examination to investigate every possible site of the disease In another case there was glomerulo tubular nephritis which caused death and a single fibrous nodule at the apex of one lung In one fatal case a subphrenic abscess was suspected and an exploratory operation was performed The surgeon found only evidence of generalised miliary tuberculosis Multiple pyogenic abscesses in the viscera were present in some of our fatal cases In others no post mortem cause was found

Course The eruption begins as a number of pink or lilac coloured spots which rapidly spread and become confluent forming a butterfly patch across the middle of the face The ears and scalp may be affected and symmetrical spots appear on the trunk and extremities As a rule the scaling of the lesions is very slight and at the onset the resemblance to erythema multiforme is very close Hæmorrhagic areas occurred in cases under Sequeira s care and bullæ sometimes filled with blood may be present The patient is gravely ill and there may be high fever and prostration The later stages are those of acute septicæmia with terminal pneumonia phthisis nephritis or meningitis In the acute stage albuminuria is common A subacute form occurs in which the eruption is of the disseminated type but there are no grave constitutional symptoms although the patient is usually in a weakly condition easily tired and lethargic Recurrences occur in this type sometimes after long intervals

other reticulo endothelioses and as a prodromal eruption in measles and other fevers

Pathology Urticaria is produced by the development of histamine in response to various types of irritant (*vide* p 19) Presumably histamine is produced in excess or is not adequately broken down by histaminase in the bowel or filtering organs such as the liver If the histamine level is not raised then certain factors concerned with the threshold of reaction by the capillaries must account for the urticarial eruption

In some instances it would appear to be an anaphylactic phenomenon particularly in the recurring type This hypothesis would bring urticaria



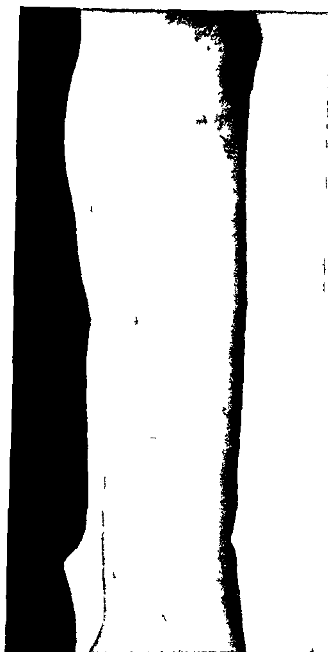
Fig 1-1 Urticaria

into the same group of diseases as asthma epilepsy and migraine and is supported by observations on the similar action of alcoholic extracts of blood from these diseases on the cat's intestine an action simulating closely that of pilocarpine (S van Leeuwen and Zeydner)

Black and Howells found that 65 per cent of chronic cases of urticaria had a diminished level of prothrombin in the blood Of these 60 per cent were relieved by vitamin K (*vide* treatment) The greatest relief occurred in patients in whom the coagulation time was prolonged

The lesion is a localised inflammatory œdema of the true skin with an enormous number of polynuclear leucocytes increase in the number of lymphocytes and sometimes of the mast cells At the centre the pressure

PLATE 27



URTICARIA

The flat wheals are distinctly raised and show the characteristic white centre

of the effusion is great enough to cause anæmia and this produces the white centre of the wheal In pomphi developed artificially and excised for examination cellular infiltration is found to occur in a few minutes After six hours eosinophiles were present (Gilchrist)

Clinical features The onset of urticaria is acute sometimes with a slight degree of fever (99 5 to 100 F) but oftener without The patient's attention is usually first attracted by the intense itching There may be evidence of gastro intestinal irritation vomiting diarrhœa etc but this is often absent

The eruption consists of well defined white or pink swellings of the skin rarely more than an inch in diameter The margin is often red while the centre is pale The lesion is exactly similar to the wheal produced by the stinging nettle The scratching induced by the itching brings out fresh wheals and mechanical irritation of any kind such as rubbing may excite them in the hypersensitive skin A special characteristic of the urticarial wheal is its rapid development and its equally rapid and complete disappearance It leaves neither scale nor stain An individual wheal may last for a few hours to several days Asymmetry is the rule and there are remarkable variations in the extent of the eruption In rare cases nearly the whole of the cutaneous surface may be involved, and also the mucous membrane of the buccal cavity pharynx larynx and probably the lining membrane of the hollow viscera as indicated by asthmatic attacks and vomiting In a unique case which Sequeira saw in consultation with Dr Henry Head the urticarial attacks were associated with epileptiform seizures The patient was a boy of sixteen otherwise healthy (see Plate 27)

Certain variations from the common type require mention In *papular urticaria* the lesions are small and the papular element persists after the disappearance of the wheal (*vide* Strophulus) In *U gigans* the wheals are enormous sometimes reaching the dimensions of an egg *U bullosa* is the name given to wheals in which the central part is raised by serous effusion into a blister Hæmorrhage into the wheal is indicated by the term *urticaria hæmorrhagica* The last variety may be associated with hæmorrhage from the kidney stomach and bowel *Factitious urticaria* is the name applied to wheal lesions produced by local irritation for instance stroking the skin sharply with the finger nail or some sharp instrument causes an immediate development of linear pomphi in susceptible subjects (Fig 199) Dermographism

Urticaria tuberosa is a rare variety characterised by the rapid development of multiple asymmetrical subcutaneous or deep seated swellings varying in size from a pea to an orange The extremities especially the fingers hands wrists feet and knees are most frequently affected The fingers show fusiform swellings between the joints Aching pain stiffness and tingling or burning cause the patient sleepless nights which are followed by languor and weakness There is no fever and the lesions which usually develop at night only last a few hours They are distinguished from rheumatoid arthritis by the absence of articular changes grating etc Recurrences are common

The duration of urticaria varies a great deal It is usually an acute affection lasting from a few hours to a few days or a week But in some

cases it runs a chronic course evanescent wheals appearing again and again perhaps for months or years Ingram had a case in which attacks of urticaria were associated with attacks of tetany and could be brought about by hyperventilation He believed there was a neurotic basis In very rare instances individual urticarial lesions last for some weeks to several months it is difficult to recognise these as urticarial lesions, but factitious pomphi may always be developed Such conditions probably have a different cause similar wheal like lesions being seen in leukæmia cutis and mycosis fungoides The nodular or so called verrucose urticarias may be of similar origin

Diagnosis The diagnosis of nettle rash is usually easy Erythema multiforme is distinguished by the more persistent character of the lesions their colour, distribution and less irritation Measles in an adult may lead to difficulty The urticarial eruption is more irritable and there are no catarrhal symptoms and the fever is less or absent Koplik s spots should



FIG 12. Urticaria factitia

be looked for Rubella is attended by enlargement of the lymphatic glands in the neck

Drug eruptions of urticarial type may lead to difficulty but here the origin of the urticaria and not its differential diagnosis is at issue Inquiry should always be made as to the taking of drugs

In cleanly subjects scabies should not be forgotten Intestinal worms may also cause urticaria

Prognosis In its acute form urticaria clears up in a few hours to a few days The recurrent type is amenable to treatment with our increased knowledge of the importance of psychological and biochemical treatment

Treatment In acute cases a purgative should be given A dose of calomel at night followed by a saline aperient in the morning is usually most efficient If there is evidence of gastric disturbance a simple emetic is also useful Pituitrin adrenalin or ephedrine usually give rapid relief

The local treatment consists in warm baths with a teaspoonful of bicarbonate of soda to the gallon or of potassa sulphurata half a drachm to the gallon This should be followed by the application of a lotion of carbolic acid (1 in 50) or of the tar and lead lotion Dusting the surface afterwards with a powder of zinc and starch is comforting An ointment of beta naphthol half a drachm to a drachm to the ounce or of salicylic acid 2 per cent, relieves the irritation

The treatment of chronic urticaria should be based on the following considerations —

(1) The exclusion of any particular *food* as a cause either by dietetic investigation or by skin tests. Drugs as excitants must also be considered and a careful history may be helpful

(2) *Non specific food sensitisation* should next receive attention. Alimentary and enteric urticaria may be controlled by the administration of peptone half an hour before meals (5–10 grains in a cachet)

(3) *General debility* especially iron deficiency and nervous conditions may be factors determining the persistence of the urticarial state and these are controlled by large doses of iron or sedative tonic measures

(4) *Biochemical imbalance* especially excess of carbohydrates in the diet is important in some cases and is dealt with by limiting the carbohydrates ingested by the administration of small doses of insulin and increasing the aneurin or total vitamin B complex in the food. Calcium and its complementary vitamin calciferol are sometimes effective although the blood calcium content is usually normal. The liver so important biochemically may be the determining factor in urticaria

Black and Howells found a diminution of prothrombin in the majority of patients suffering from chronic urticaria who had not been relieved by trial diets the search for infections or allergens or the avoidance of drugs. Sixty per cent of such cases were relieved by the oral administration of vitamin K in the form of menaphtone (B P) in 2 milligramme doses thrice daily before meals. Some patients were relieved in two or three days but most required three to four weeks treatment. Relapses occurred in one third but were usually relieved by further treatment on the same lines. In our hands the results have not been so successful

(5) *Endocrine factors*. Since many urticarial eruptions respond quickly to injections of adrenalin or pituitrin and often to ephedrine by mouth it would appear that endocrine factors are important indeed since the endocrine glands are influenced by emotional states and they largely control the vegetative nervous system their effect in urticaria is not surprising. Other hormones are less potent but we have seen a dramatic effect from ovarian follicular hormone in urticaria at the menopause. Experience with extract of spleen failed to confirm the report that the substance was a potent remedy for urticaria

(6) We believe that in the past too much stress has been laid upon the relationship of urticaria to septic foci and toxæmia from sepsis although we realise that such foci and abnormal metabolic processes of pelvic or gall bladder origin may occasionally be causative

(7) The purely psychological group a considerable proportion of the *chronic* urticarias can often be dealt with by a little homely psychology sedatives a tonic and vitamin B therapy. In a few resistant cases the assistance of the psychotherapist may be required

(8) There are rare cases of urticaria in which the most careful investigation fails to indicate a cause. In some of these shock therapy has proved of value. We have seen great benefit from *auto hæmotherapy* the removal of 5 to 10 c cm of blood from a vein and its immediate injection in the gluteal region. Injection of sterile milk aolan etc has also proved successful

An injection of adrenalin or pituitrin as for asthma may sometimes abort an attack or relieve the intense irritation. Ephedrine hydrochloride and phenobarbitone together (½ gr doses) have a more prolonged effect.

The treatment of urticaria tuberosa is on the lines described for the more common varieties.

Angio-neurotic œdema. Giant urticaria. Quincke's œdema

Etiology. Angio neurotic œdema may begin in infancy, but is most common in early adult life. Both sexes are affected, females rather more frequently than males. The disease is rare and less common in hospital than in private practice. Heredity occurs in a remarkable proportion of the cases. Of 141 persons in seven generations 40 were affected and 1? died from suffocation caused by laryngeal œdema. Other predisposing causes are menstruation, hysteria, melancholia and Graves' disease. The exciting causes are cold, injury, diet, drugs and nervous conditions such as neurasthenia, worry, overwork, fright and insomnia. Digestive troubles are also known to cause an attack.

Clinical features. The majority of the attacks occur between 1 and 5 A.M. *The eruption is characterised by circumscribed swellings which disappear spontaneously in a few hours to a few days.* The swellings may *be the same colour as the skin or of a waxy appearance and cold to the* touch or red and hot. In rare cases there are ecchymoses. The lesions are *firm and elastic or hard.* On the extremities they may be as large as a nut or an orange; on the face and hands and external genitals the swellings may be enormous. *The lesions are generally asymmetrical and may be widely separated.* Itching and stiffness are experienced. The lips, palate, pharynx and larynx are often involved and sometimes the trachea and intestines. The outbreaks occur at irregular intervals and sometimes like asthma appear to depend upon certain localities. Like some cases of urticaria and asthma, angio neurotic œdema would appear to be an allergic phenomenon. Hæmoglobinuria, albuminuria, tachycardia and purpura and also abdominal crises such as are seen in Henoch's purpura may occur. When the pharynx or larynx is affected, sudden œdema of the glottis may cause a respiratory crisis calling for intubation or tracheotomy. Many deaths have been reported, but we have not had a fatal case and the prompt use of adrenalin or pituitrin usually averts the danger.

The **diagnosis** of angio neurotic œdema from lymphangitis of the face is not difficult, as the latter condition is more chronic and is attended with persistent swelling.

Treatment. Great care must be taken to find out whether any drug, especially aspirin, or article of diet is an exciting cause. Treatment is on the same broad lines as described for chronic urticaria, but adrenalin, ephedrine or pituitrin often stop or restrain the eruption if given early. Sedatives and reassurance are particularly valuable.

Papular Urticaria. Strophulus (Gum Rash. Lichen urticatus)

Etiology. Strophulus is a disease of early infancy. It usually occurs about the period of *dentition and is so common that very few children*

do not suffer from it to a greater or less degree Occasionally it may appear in older children Essentially it is an allergic response of the skin and usually responds to a change of environment Exceptionally it s the reaction to a specific food allergen It is often associated with over feeding with carbohydrate and with gastro intestinal troubles constipation diarrhœa foul motions etc Dental irritation is probably less important than the association of digestive disorders Some authorities regard strophulus as a neurodermatosis and it is considered as a form of prurigo Nervous factors are undoubtedly of prime importance in some cases

Pathology The papule of strophulus is a papillary œdema with the infiltration of lymphocytes and dilatation of vessels as seen in urticaria The corpus mucosum is also œdematous and under the stratum corneum there is a mass of imperfectly formed horny cells with a spongy condition of the cells of the epidermis resembling that seen in eczema but the



FIG 1?3 Bullous urticaria in child aged 4 small papular lesions on legs

essential features are those of a circumscribed urticaria Later cystic spaces may appear in the epidermis and approach the surface as clinical vesicles or bullæ

Clinical features The onset is acute the child often being in good health or perhaps a little out of sorts on account of the eruption of a tooth The rash consists of papules and urticarial wheals The wheal is evanescent while the papule persists Each papule is about the size of a pin s head or a little larger of a pale pink colour or sometimes little different from the normal tint of the skin The top of the papule may present a tiny scale or yellowish point In rare cases the lesion is vesicular or bullous and occasionally large clear blebs are the presenting features the papules being sparse or absent The papule is firm to the touch and at the outset it is situated in the centre of a small wheal which disappears in three or four hours The papule itself lasts a week to a fortnight Hence on examination the papules outnumber the wheals but inspection at night will usually show fresh wheals The top of the papule is often torn off by

the scratching of the child and a small blood crust is found at the apex The lesions may leave small brown stains

The *eruption occurs on the limbs and trunk, the former* distribution being the more common In bad cases the face and neck may be affected but the palms and soles nearly always escape excepting in infants Crops of four or five to a dozen or more lesions appear and continue to come out daily for weeks All stages of the lesions are thus present in a marked case The eruption as a whole may last *for three or four weeks to as many* months and recurrences occur during the whole period of dentition in some children and even after the eruption of the teeth has ceased As a rule however strophulus clears up when the child is three years old and if it should persist there is a probability that the condition is Hebra s prurigo which also presents shotty papules

The itching is variable and may be intense the unfortunate child scratching constantly in the endeavour to find relief from the pruritus

Diagnosis Strophulus has to be distinguished from scabies, which is characterised by burrows and specially affects the palms and soles often becoming pustular and from sudamina where there will be excessive sweating In older children the eruption may simulate papular erythema which chiefly affects the backs of the hands and the elbows—and papular *eczema which is often associated with oozing areas or there* may be a history of weeping The vesicular lesions may suggest varicella but the long continuance of the eruption its peripheral distribution and the absence of the peculiar glassy vesicles of chicken pox should prevent mistakes and the constitutional disturbance of an exanthem is absent

Prognosis The eruption tends to recur during the period of dentition and the attacks vary greatly in intensity but usually clear up in three or four weeks to as many months

Treatment As Hallam demonstrated immediate cure of *strophulus can* usually be effected by the removal of the child from its home surroundings to hospital Unfortunately, returning the child to parental care is often attended by relapse The condition of the alimentary canal and the diet require careful attention Meals must be given at regular intervals sugar and starch being restricted and foods rich in vitamin B complex included Sweets chocolates biscuits cakes bananas ice cream, etc should be severely restricted and not allowed between meals Bicarbonate or magnesia and rhubarb and grey powder or *fractional doses of calomel* are usually given with great benefit Where the itching causes grave insomnia chloral hydrate grs iij for a child of three years is of service or small doses of bromide may be given with the alkaline mixture A few good nights are usually followed by considerable improvement in the *general condition* The child should be bathed in a weak alkaline solution one drachm of sod bicarb to the gallon The itching is usually relieved by the application of 2 per cent of phenol in lead or calamine lotion

Purpura

Purpura or hæmorrhage into the skin is classed as symptomatic *where the cause is known and* idiopathic where the etiology is obscure

Eli Davis in an analysis of 500 consecutive cases found 6° per cent to be symptomatic (*Lancet* August 7 1943 p 160)

Etiology Hæmorrhage into the skin occurs —

(1) As an *inherited familial* affection

(2) From *local injury* to the skin and superficial vessels *e g* in contusions insect bites rupture of varices

(3) In *infections* In the *acute fevers* as—

(*a*) A characteristic feature in typhus cerebro spinal fever Rocky Mountain and Tsutsugamushi fevers

(*b*) A *rare episode* commonly denoting malignancy in small pox measles diphtheria and scarlet fever dysentery cholera yellow fever plague relapsing fever malaria and blackwater fever

(*c*) In *bacteriæmia and pyæmia* from infection by staphylococci streptococci meningococci pneumococci and very rarely in *tuberculosis* and *syphilis* It may occur in pyogenic affections of the mouth nose throat and middle ear



Fig 1?4 Senile purpura

(4) In *rheumatism* This connection receives special attention later

(5) In *chronic hepatic disease and jaundice*

(6) In *hypertension* renal or essential and in cardiac failure

(7) In *blood diseases*—anæmia leukæmia Hodgkin s disease and the hæmolytic disease of the new born

(8) After the *administration of drugs* iodides bromides chloral quinine salicylates gold sulphonamides sedormid adalin

(9) In *poisoning* by tri nitro toluene

(10) In *senility*

(11) In *certain vitamin deficiency diseases* notably scurvy

(12) Without known cause (idiopathic)

It has been suggested that some forms of purpura are anaphylactoid but we have seen no reason to support this hypothesis

Essential pathology of purpura (1) *Defects in the endothelium of capillaries*

(a) In scurvy—plasma and platelets normal fragility of capillaries much increased
(b) In senile purpura
(c) In toxic states—uræmia and cachexia pregnancy, etc
(d) In infection Sometimes the platelets are greatly increased when thrombosis may co exist with hæmorrhagic lesions If thrombocytopenia develops the association with damaged endothelium may be manifest as purpura fulminans As a rule in acute infections the platelets diminish in the early phases increase during convalescence and subsequently fall to normal limits



Fig 1.. Purpura Extensive ecchymoses

(2) *Reduction of platelets*

(a) In toxæmias and infections as above
(b) In poisoning by inorganic and organic substances arsenic gold, T N T etc sulphonamides The endothelium is probably damaged too
(c) In chronic splenomegaly *i e* splenic anæmia and *Gaucher's* disease
(d) In diseases of the blood forming organs

N B Reduction of platelets may be due to —

(1) Proliferation of megaloblasts in pernicious anæmia
(2) Proliferation of leucoblasts in leukæmia
(3) Pressure atrophy of megakaryocytes and consequent thrombocytopenia due to primary or secondary growths of the bone marrow in which category pernicious anæmia and the leukæmias may also be placed
(4) Degeneration of the bone marrow in aplastic anæmia agranulocytosis and in malignant thrombocytopenia

Clinical features The lesions of purpura are (1) *petechiæ* small red or purple well defined areas not raised above the level of the surrounding skin The colour does not disappear on pressure (2) *Vibices* red lines

or streaks (3) *Ecchymoses* large flat slightly raised red or purplish patches like bruises (4) *Hæmorrhagic bullæ* blisters containing blood The lesions appear suddenly and on fading pass through the colours of a bruise purple greenish and yellow Several varieties of idiopathic purpura are recognised but a comparison of their clinical features and the difficulty in drawing hard and fast lines between them suggest that they are merely differences in degree (Plate 28)

(1) **Purpura simplex** In this form children are more frequently affected than adults The condition may be familial and Dr Eli Davis reported 79 cases (including 75 females) The eruption consists of petechiæ and macules varying in size from 1 to 10 mm level with the surrounding skin The lower extremities are usually affected but the spots may also occur on the upper limbs Ecchymoses are apt to appear

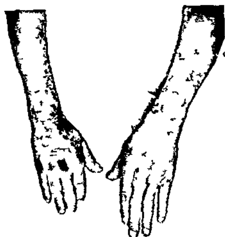


FIG 126 Congestive purpura in cardiac failure

intermittently on the limbs front of the chest and on the back (Fig 125) There is no fever and beyond slight malaise there are no symptoms The disease is probably toxic the patient often being badly fed and living in unhygienic surroundings Rest and good food lead to rapid recovery but there may be relapses Neither vitamin C nor P is effective in idiopathic purpura simplex

Essential thrombocytopenia idiopathic purpura hæmorrhagica Morbus maculosus hæmorrhagicus of Werlhoff is a more severe affection characterised by a decrease in platelets from a normal of 250 000–450 000 per c mm to 5 000 60 000 and abnormal sizes including giant forms may be present The bleeding time is increased but the coagulation time is normal although clot retraction is retarded and incomplete Fragility of the capillaries points to some defect of the endothelium

There may be an acute onset and course with febrile symptoms and headache but there are no articular pains Sometimes the hæmorrhages into the skin precede the general symptoms As a rule the eruption appears

first on the legs but spots may come out on the upper extremities and on the trunk The lesions are petechial at the onset, but generally there are some large ecchymoses—sometimes as large as the hand—and occasionally subcutaneous hæmorrhages causing deep seated swellings covered by unaltered skin Bleeding from the lips gums mouth, nose stomach intestine or kidney occur In the less severe cases it is common to find small hæmorrhages into the soft palate In the grave cases the loss of blood from the vessels may cause a profound anæmia but even then the mortality is not high The spleen may be palpable

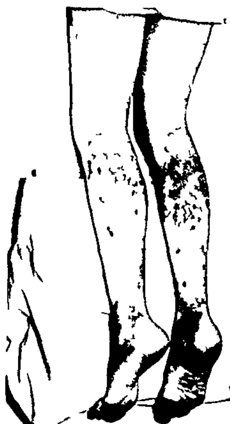


FIG 127 Acute toxic purpura enlarged liver and spleen (Dr L Davis)

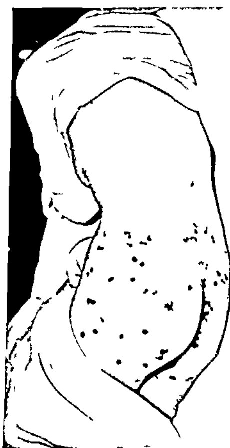


FIG 128 Schönlein Henoch purpura with arthritis and melæna

Treatment in the acute type is symptomatic and transfusions may be of value Splenectomy should be considered in chronic severe cases

(3) **Henoch's purpura** Anaphylactoid purpura The latter term has come into vogue and suggests an allergic basis for which the evidence is quite inadequate Purpura simplex is sometimes included with Schonlein Henoch purpuras under this title This form occurs in children The cutaneous lesions do not differ from those of the last group viz petechiæ with erythema and urticaria There are occasionally articular pains but the distinguishing symptoms are gastro intestinal They comprise colicky pains and vomiting and the passage of blood in the motions The abdomen is tender and there is usually pyrexia The attacks of pain and

sickness are recurrent and very suggestive of intussusception They last but a few days Albuminuria is common Recovery is the rule but relapses may occur

It is believed that the abdominal symptoms are caused by hæmorrhage into the wall of the bowel and temporary paralysis of the section affected Intussusception which is stimulated by the recurrent colic and melæna sometimes actually occurs from local paralysis of the gut

(4) **Purpura rheumatica** Peliosis rheumatica (Schonlein s disease) (Gk *peliosis* a livid spot) is sometimes regarded as a variety of anaphylactoid purpura In this variety there are articular pains and swellings in addition to the cutaneous lesions but the arthritis leaves no deformity The eruption is symmetrical affecting the legs and feet and the arms and hands and occasionally the trunk The lesions vary in size from a pea to a shilling They are not flat but raised like the lesions of erythema multiforme which is often associated with the purpura Urticarial wheals are also not uncommon Sequeira had a case in which the eruption was mainly purpuric on the lower extremities while that on the upper limbs was erythematous and at a later stage the upper part of the trunk was covered with urticarial wheals

The general symptoms are pyrexia malaise and joint pains Occasionally there is vomiting Evidence of valvular disease of the heart is sometimes present

Peliosis rheumatica is peculiarly prone to recur sometimes after the lapse of months sometimes after several years

(5) **Purpura fulminans** In this fortunately rare type the hæmorrhages into the skin are extensive but the mucous membranes are unaffected The high pyrexia and death in a few hours suggest a microbic infection of peculiar virulence Of sixty five recorded cases eighteen followed scarlet fever

Meningococcal adrenal syndrome This condition which has been not infrequently reported must be considered here as *its outstanding features* are its sudden onset and extensive *petechial eruption* The syndrome has all the character of a fulminating *septicæmia* The patient on admission to hospital has a greyish pallor and is often *cyanotic* The pulse is poor or imperceptible and the blood pressure very low Vomiting is usual and the vomit may contain blood Diarrhœa is a frequent symptom The infection is meningococcal and two types of reaction may be recognised In one there are no symptoms suggesting intracranial disease beyond slight neck rigidity and that may be absent The general condition is flaccid Death may occur in twenty four *hours* after the onset but recovery is possible with early diagnosis and prompt treatment The majority of cases however end fatally

In the second type the general symptoms are the same but there are coma stertorous or Cheyne Stokes breathing and other evidence of meningo encephalitis

At autopsy the characteristic feature is the peculiar plum colour of the adrenals which show a narrow zone of hæmorrhage round the periphery and necrosis of both cortex and medulla Visceral and serous membrane hæmorrhages are usual In the other variety in addition to the adrenal changes purulent meningitis and encephalitis with hæmorrhages are found

Treatment Patients have been saved by early diagnosis and by the immediate intravenous injection of heavy doses of sulphathiazole or sulphapyridine If the patient is able to swallow the drug is continued orally in large doses If there be coma or vomiting intravenous injections should be continued It must be remembered that the patient is in a condition of shock and measures must be taken to combat this by warmth and stimulation The adrenal symptoms are treated by repeated injections of glucose and of alternate doses of cortical extract intravenously every four to six hours and of desoxycorticosterone acetate intramuscularly

REFERENCE —BANKS H S and J I McCARTNEY 1943 *Lancet* i 771 Illustrations and literature

Diagnosis of purpura The lesions may be mistaken for those of *erythema multiforme but the colour does not disappear upon pressure* Occasionally however, in peliosis and in Henoch s purpura there are both *erythematous and hæmorrhagic lesions* Flea bites are *small punctate* hæmorrhages but they are surrounded by a zone of erythema at first and do not come out in crops

To say that a patient is suffering from " purpura ' is merely to diagnose a symptom and is of no more real value than the application of the name ' epistaxis ' to bleeding from the nose The general condition must be carefully investigated with a view to determining the cause In some instances it will be found that the dietary is at fault and that the condition approaches scorbutus in character (*vide* page 88) Particular attention should be paid to the spleen and lymph glands and studies made of the cytology of the blood, bone marrow and spleen pulp Estimations of bleeding time (normal 5–15 minutes) clotting time (normal 4 minutes) and capillary fragility may be of value Capillary hæmorrhages may be observed in the nail bed on examination with the skin microscope In many cases, it must be admitted it is impossible to determine the cause of the cutaneous hæmorrhages and we are obliged to make the diagnosis of idiopathic purpura

Prognosis With the exception of the very rare cases of *purpura fulminans* the prognosis is good As indicated in the clinical history, *peliosis rheumatica is very prone to recur and it is not safe to give a* promise of freedom from future attacks in this variety

Treatment *The mild cases do not require any* special treatment If there is an extensive eruption rest in bed should be enjoined Any scorbutic tendency must be treated by giving plenty of vegetables in the diet and lemon or lime juice and fruit such as oranges or ascorbic acid 50 or 100 mg t i d p c Vitamin K 2 mg t i d may also be tried

Calcium and vitamin D are popular but rarely effective remedies

No specific therapy appears to be effective in idiopathic purpura simplex In the symptomatic purpuras appropriate treatment should be given to the primary disease and in all cases efforts should be made to improve the general condition of the patient Septic conditions of the mouth and throat should be treated by antiseptic mouth washes and gargles Listerine, 10 per cent is very useful

Adrenalin chloride (1–1 000) in doses of two to three minims has proved very serviceable *in some grave cases*



PURPURA

The purple tint is well marked. The colour did not alter on pressure



Subcutaneous injections of horse serum (20 c c) at intervals of two to three days proved successful in a grave case of purpura hæmorrhagica under Sequeira s care In a severe case of the same type Finsheimer injected into the buttock 20 c c of whole fresh human blood obtained from a relative of the child with satisfactory results such injections may be repeated

Splenectomy has been performed with success in grave cases of recurring purpura hæmorrhagica in which there is marked diminution in the blood platelets

Schamberg s Disease

The condition may be defined as a peculiar progressive pigmentary disease of the skin characterised by the presence of minute telangiectases pigmented and atrophic spots According to Schamberg s original description the lesions consist of sharply defined reddish brown areas of varying size with small outlying pin head macules of the same colour The borders of other patches are made up of pin point to pin head sized puncta closely resembling cayenne pepper though darker in tint Some present a telangiectatic appearance These are the primary lesions which form the larger patches by peripheral extension With involution a brownish yellow staining is left and small areas of atrophy may be seen The disease usually begins on the shins and spreads to the ankles and dorsa of the feet but may involve the knees thighs or arms in exceptional cases Symptoms are rarely present

The clinical appearances and even the microscopical picture may closely resemble the purpura of Majocchi and undoubtedly very similar lesions may occur in some cases of chronic varicose dermatitis (p 122)

The histopathology is that of a subacute inflammatory infiltrate in the upper layer of the dermis with dilatation of blood vessels and lymph spaces proliferation of small vessels diapedesis of red cells and the presence of hæmosiderin intracellularly or free Iron free pigment is also present There is secondary atrophy of the epidermis

The disease runs a very chronic course and treatment is unsatisfactory Local ultra violet light in mild erythema doses and 2 per cent of ichthyol in calamine cream may be tried

Pigmented purpuric lichenoid dermatitis Gougerot and Blum described an eruption of small purpuric or telangiectatic slightly raised papules later becoming pigmented in varying shades The lesions may be numerous and either discrete or aggregated into irregular patches The lower extremities are most commonly affected symmetrically but the arms and trunk may be involved Itching is variable and may be absent

The condition is likely to be confused with Schamberg s disease (which is not papular) and with lichen planus

It may be treated on the same lines as lichen simplex but is apt to run a more chronic and refractory course

Purpura annularis telangiectodes This rare condition first described by Majocchi occurs most often in adolescence and early adult life

MacKee collected 38 cases in the literature—31 males 7 females It has three stages —

(1) *Telangiectatic stage*, characterised by well defined pink or red macules to ½ inch in size Under the glass they are seen to be composed of a network of dilated capillaries with numerous minute dark red puncta The colour of the spots becomes paler on pressure, but the dark puncta are unaffected

(2) *Hæmorrhagic pigmentary stage* The lesions spread very slowly and may reach 1 inch in diameter The central parts lose their red tint and become pigmented while the periphery is still bright red and contain many dark red puncta The coalescence of these annular lesions produces various figurate patterns

(3) *Atrophic stage* After a period of quiescence the lesions lose their sharp outline the edge becomes pale and of a brownish yellow colour, and



FIG 129 Purpura annularis telangiectodes (Majocchi)

finally the spots disappear, the pigment being lost after the lapse of months *Atrophy and alopecia of the affected areas may remain* The patient complains of pain and pruritus The several stages may be present *simultaneously in different areas*

The eruption is bilaterally symmetrical and usually begins on the legs and dorsal aspects of the feet The thighs forearms arms and trunk may be affected The whole process is slow in evolution and may last from several months to a year Histologically the essential feature is an obliterative endarteritis with cell infiltration round the capillaries In the hæmorrhagic stage areas of extreme dilatation and engorgement are present Diapedesis of red cells may occur and deposits of hæmosiderin are found in the corium The vessels chiefly affected are those in the deeper parts of the corium and in the hypoderm In the atrophic stage the number of vessels is diminished and the cell infiltration disappears the papillæ are obliterated, the glandular elements are atrophic, and the elastic fibres are diminished or lost The occurrence of similar lesions as drug eruptions following adalin or acetyl adalin suggests a toxic origin

The etiology is unknown

This affection appears to be uninfluenced by treatment and the attacks usually cease in from eighteen months to two years

Poikilodermia Atrophicans Vascularis (Jacobi)

The onset of this disease is usually a patchy erythema occurring on any part of the body but often on the larger flexures and axillary folds The face is often spared As the condition develops the variegated skin (Gk poikiloderma) results from the appearance of telangiectases minute



Fig 1.0 Dermato myositis and poikilodermia

petechial hemorrhages pigmentation depigmentation and miliary lichenoid scaly papules The areas are usually covered with adherent scales the skin is atrophic and in places crinkled like cigarette paper Sclerosis of the skin and muscular weakness are not found in poikilodermia which differentiates the condition from dermatomyositis There are no general symptoms and the disease is slowly progressive The clinical picture is suggestive of X ray dermatitis The cause is unknown

Histology The epidermis may be very thin over the infiltrated papules but normal elsewhere The rete pegs are diminished in number but the remaining ones are sometimes elongated The œdematous papillary body is densely infiltrated with lymphocytes and fibroblasts The collagen and elastic fibres are unaltered except in the infiltrated areas

REFERENCE—G B DOWLING and W FREUDENTHAL 1938 *Brit J Derm and Syph* 50 519 (Including full references)

Poikilodermia of Civatte This disease is probably unrelated to the previous type of poikilodermia although the appearances on the skin consist of the same elements The disease usually occurs in women about the menopause and the eruption affects chiefly the sides of the face and neck The pigmentation shows a reticular pattern and telangiectases and minute areas of atrophy make up the variegated appearance

The etiology is also obscure but occasional success has been claimed with ovarian hormone therapy and the condition is regarded by some authorities as an endocrine disorder

Poikilodermia of Jacobi and dermatomyositis Skin changes of a somewhat similar character are often associated with dermatomyositis (see p 199) where the essential change is œdema and infiltration of muscles followed by fibrosis and contractures Muscle weakness is an early symptom A reticular pigmentation telangiectasia, follicular papules and hypertrichosis are seen particularly on the extremities and there may be preceding erythema and œdema (Fig 130)

Riehl's Melanosis In 1917 Riehl described a similar reticular pigmentary dermatosis usually of the face, which is thought to be the result of inhalation of tar fumes or of contact with or ingestion of petroleum products Prolonged exposure to coal dust pitch or asphalt may also give rise to a melanosis and it is thought that the mechanism of its production is a sensitisation to light although pigmentation may appear at sites of friction or intertrigo Thus the face neck, limbs groins and navel may be affected The colour varies from a reddish brown to a slaty black and is patchy and finely reticulate and so resembles poikilodermia Later atrophy and telangiectases increase the resemblance but keratoses and follicular lesions may help to incriminate tar and its products

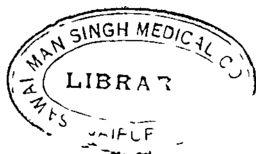
Erythose peribuccale pigmentaire de Brocq This is a rare peribuccal pigmentation almost peculiar to women The colour is brown or brownish red it is symmetrical and well defined within the muzzle-area and appears to vary considerably in intensity from time to time It appears to depend upon vasomotor tone influenced by endocrine and gastro intestinal factors

PLATE 29



ERYTHRODERMIA

Lymphoblastic type. Male aet. 40



[T f ep

CHAPTER XIV

ERYTHRODERMIA AND GENERALISED EXFOLIATIVE DERMATITIS (PITYRIASIS RUBRA)

The Erythrodermias

Erythrodermia This name is usually reserved for the extensive or universal erythemata associated with varying degrees of scaling and cellular infiltration of the dermis Quite often the cause of the condition and the clinical and histological pictures of the reaction are identical with or very similar to those of the toxic erythemata Primary and secondary varieties are described and the latter will be discussed first

Secondary Erythrodermias

Not infrequently the erythematous eruptions due to arsenic pass from the localised forms mentioned into a universal erythema with exfoliation the skin is infiltrated and thickened and the condition is then a true erythrodermia Similar conditions with less scaling also occur after toxic reactions to gold mercury bismuth and antimony given internally and to certain drugs such as chrysarobin and oil of cade applied to the skin although in the latter instances the underlying condition usually psoriasis is probably the determining factor Even without irritating treatment psoriasis is occasionally followed by a general exfoliative dermatitis (or erythrodermia) which may persist for years and more rarely the same eruption is a sequel to eczema seborrhoeic dermatitis pityriasis rubra pilaris and lichen planus In such cases evidence of the primary disease often exists the erythrodermia runs a benign course and with its disappearance the original disease may reassume its ordinary character On the other hand such secondary erythrodermias occasionally run an acute course and rapid wasting indicates a grave toxæmia with impending fatal issue thus showing no essential difference from a primary erythrodermia

Erythrodermia also occurs in the *premycosic stage of mycosis fungoides* but there the unusual feature of intense itching which commonly precedes the eruption suggests the diagnosis The lymph glands may be enlarged but the blood count distinguishes mycosis fungoides from leukæmia which very rarely simulates it and the late appearance of tumours is quite characteristic The *treatment* apart from that of the primary skin disease is on the same lines as that to be discussed for the next group

Lymphoblastic erythrodermia Sequeira and Panton 1925 described a series of cases of *Lymphoblastic erythrodermia* the striking feature of which was a relative and absolute increase of the lymphocytes especially the small lymphocytes which were as much as 80 per cent of total counts of 8 000 to 60 000 The *skin* (Plate 29) was described as of a dull rose redbrick colour with sealing Pruritus was a marked *feature* Glandular enlargement was present in all but never to the extent seen in chronic

PLATE 20



ERYTHRODERMIA

Lymphoblastic type. Male aet 40

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Lymphoblastic erythrodermia Sequeira and Panton 1923 described a series of cases of *Lymphoblastic erythrodermia* the striking feature of which was a relative and absolute increase of the lymphocytes especially the small lymphocytes which were as much as 80 per cent of total counts of 8 000 to 10 000 The skin (*Plate 29*) was described as of a dull rose redbrick colour with scaling Pruritus was a marked feature Glandular enlargement was present in all but never to the extent seen in chronic

lymphatic leukæmia The disease ran a chronic course over a number of years and was unaffected by treatment These cases of lymphoblastic erythrodermia are still regarded in some quarters as manifestations of chronic leukæmia and the relatively low white count is ascribed to an aleukæmic phase As a matter of fact erythrodermia is a very rare complication of leukæmia and when it does occur it is usually scaly and the skin is appreciably infiltrated Skin infiltration with nodule and tumour formation, may occur in myeloid leukæmia, but it does so without erythrodermia and has a characteristic blood picture In Sequeira's cases lymphocytic infiltration of the skin only occurred in the last stages which is a further distinction It should be added that diagnosis is difficult in this group and in all cases examination should include the spleen and lymph glands, sternal puncture and repeated differential blood counts should be made and when possible biopsy of the skin and glands Any of the reticulo endothelioses or sarcoidosis may rarely give rise to an erythrodermia

Primary Erythrodermias

A *congenital* form of *erythrodermic xeroderma* (ichthyosiform erythrodermia) has been described in which the ordinary type of xeroderma is

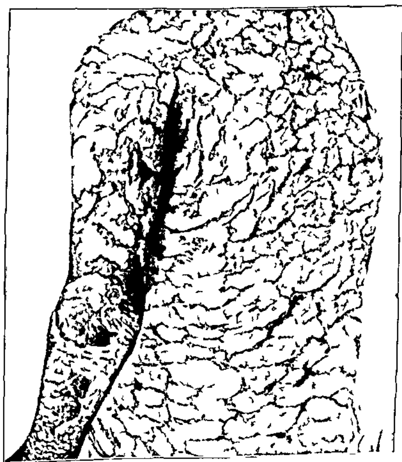


Fig 131 General exfoliative dermatitis (From a drawing of a patient under the late Sir S Mackenzie)

coloured by a general erythema. The erythrodermia may clear in six to twelve months to leave xerodermia. In infants this type has to be distinguished from the acquired exfoliative dermatitis of Ritter, i.e. a type of impetigo neonatorum.

The *acquired erythrodermias* may either be acute or chronic and the former is represented by the recurrent variety of scarlatiniform erythema previously mentioned.

The chronic varieties are two types of *exfoliative dermatitis* which have sufficiently constant clinical features to be regarded as clinical entities although it is doubtful whether their etiology is constant. Some cases

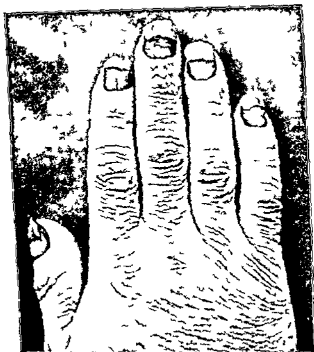


Fig. 131. Exfoliative dermatitis. The photograph shows the affection of the nails.

arise as described under secondary erythrodermias and the skin condition progresses and becomes fixed in a chronic state quite indistinguishable from that about to be described. The probable explanation is that the skin is reacting to some toxin.

General exfoliative dermatitis of Erasmus Wilson. This is a subacute type of exfoliative dermatitis in which an erythema tends to become universal and the skin sheds large sheets of thick scales (Fig. 131).

Etiology. These cases are regarded as primary types because the condition arises without obvious cause although a number have followed fright or exposure to cold. No clinical difference marks the secondary cases which follow, for example, intravenous arsenic or inunction of chrysarobin, so that the division into primary and secondary types is

academic rather than practical Males are rather more affected than females and the disease is more common in middle age

Pathology The vessels in the upper layers of the dermis are dilated and around them is some infiltrate of leucocytes and small round cells The epidermis is more affected than in the simple erythemata and the horny layer is thick contains nucleated cells (parakeratosis) and is easily detached Beneath this the leucocytes collect and probably assist detachment and there is œdema of the prickle cell layer and hypertrophy (acanthosis) but *in later stages the epidermis is thinned by atrophy*

Clinical picture The condition usually begins with malaise and moderate fever which may recur during the course A patchy erythema *is the precursor of the eruption* which covers the whole body surface in a week or two and scaliness soon appears On some areas the scales are thin and papery but on the flexures overlapping produces thicker layers and on the palms and soles hard plates separate more slowly The hair and nails (Fig 132) show dystrophic changes and may be shed Desquamation is continuous and handfuls of scales collect in the bed The skin is hot, dry and tense and causes much discomfort Interference with heat regulation makes the subject complain of cold The scalp is affected and in appearance resembles acute seborrhœic dermatitis the scales and crusts being matted in the hair As a rule most of the lymph glands are hard and easily palpable but not significantly enlarged (see Plate 30)

Course and prognosis The average case *runs a course of* three to twelve months In about one in ten a fatal issue occurs and most of these follow a protracted course like that of Hebra s type which has little further to distinguish it

Pityriasis rubra of Hebra-Jadassohn Dermatitis exfoliativa It is a moot point whether this condition is a separate entity from the above In any case the resemblances are so numerous that a much briefer account will be given and the remarks on diagnosis and treatment apply to both

It may be defined as a rare disease characterised by universal redness and fine scaling the skin being thin instead of thickened and infiltrated as in the subacute type described above This latter is a weak point because *wasting takes time and ultimately occurs in both types but* pityriasis rubra has the further distinction of being usually fatal and in a percentage of cases is associated with active tuberculosis Consequently some authorities regard the disease as a tuberculide but perhaps a majority believe it to be a non specific toxæmia in which tuberculosis may be its occasional cause or merely a complication Nothing further need be added about clinical appearances but the prolonged course leads to wasting which with the atrophy of the skin gives a picture of an emaciated subject in a thin red scaly integument which is too tight for comfort pale areas over *prominences such* as the knees and elbows and cracks in the flexures witness this Febrile periods intervene and the patients become susceptible to skin and systemic infection the former resulting in boils abscesses ulcers and pressure sores *the latter producing* tuberculosis pneumonia enterocolitis etc, which are often terminal

Diagnosis of exfoliative dermatitis The only real difficulty is to differentiate between the primary *and secondary types for the appearance* of general exfoliation is unlike anything else even the desquamation of

PLATE 30



EXFOLIATIVE DERMATITIS

[illegible] the characteristic redness and desquamation. The nails and the hair were shed.

scarlet fever Most of the secondary cases occur after parenteral medication with arsenic for syphilis or with gold for tuberculosis arthritis and various skin diseases The other common pre existing disease is psoriasis then much more rarely seborrhoeic dermatitis lichen planus eczema pemphigus foliaceus and mycosis fungoides

Dermatitis exfoliativa neonatorum of Ritter von Rittershain must be mentioned here This condition begins as a red exfoliating patch on the face or other parts of the body of nursing infants and the rash spreads and may become universal Ritter thought it was pyogenic in origin and the presence of vesicles bullæ and crusted septic fissures supports this view Most cases resolve in a week or two

Very similar cases in children have been described by others and these like some adult cases occur in epidemics indicating an infective origin As regards diagnosis the clinical picture usually demands the term exfoliative dermatitis and the discovery of contact cases indicates that the skin condition is a manifestation of infection (*Cf* Epidemics of pemphigus neonatorum in maternity clinics p 446)

Treatment Care must be taken to avoid chills and skin sepsis to which patients with exfoliative dermatitis readily succumb

General Patients should be put to bed between blankets and pyjama suits made of surgical lint make other dressings unnecessary Diet should be liberal with a large fluid intake Treatment of secondary types depends upon the cause if drugs *e g* arsenic or gold intravenous injections of sodium thiosulphate 0 5–1 gramme in 10 c c of sterile distilled water may be given daily for six days Its value is doubtful unless given early and good results have been claimed for it in other cases of exfoliative dermatitis If psoriasis is the primary disease since the etiology of this is obscure one has no specific indication for treatment and so it often happens that the management of primary and secondary types of exfoliative dermatitis is the same Quinine seems to be the most useful drug and these patients are often very tolerant of it doses of v–xx grains t i d having been given without producing symptoms Salicin and alkalies may be tried but above all sedatives are indicated since insomnia and irritability are very common Bromides and luminal are usually sufficient Apart from the above measures general tonics and symptomatic treatment should be given Large doses of ascorbic acid have been recommended and we have found doses of 500 mg daily to be beneficial

Local treatment is simply palliative but the patient s comfort depends largely upon it In the early stages the skin should be kept dry with cooling talcum dusting powder but if sensations of heat dryness and tension persist the lint pyjamas may be kept moist with a lotion of glycerine of lead subacetate and glycerine one ounce of each to a pint of water as prescribed by Stephen Mackenzie The dyes (gentian violet or brilliant green 1 per cent aqueous solution) have been found useful as in the erythrodermia due to arsenic They probably act as in the treatment of burns A lotion of liq plumbi subacet fort one drachm to a pint of milk is also cooling Although oils and grease keep the skin hot and are messy when mixed with the abundant scales watery lotions and glycerine are often insufficient to moderate the dryness and then creams may be tried

E g Ichthyol, gr 20	or Glycerine of lead subacetate ♏180
Lanolin, gr 60	Lanolin (anhydrous) gr 120
Olive oil, ♏120	Glycerine of starch to one ounce
Lime water to one ounce	

Sometimes a simple oil is even better, e g, olive oil or liquid paraffin and if pruritus is marked, phenol or eucalyptus oil up to 2 per cent may be added but attempts to improve the simple emollients are fraught with disappointment

Light ointments with coconut oil or a cold cream base may be of service and combinations of tar or balsam of Peru 2 per cent with 0 5 of sulphur and salicylic acid may suit the skin Pastes are more protective and zinc paste with 1 to 2 per cent of tar or ichthyol is useful for the cracks in the flexures

Last of all, baths are rather exhausting but may be tried with caution Fractional doses of X rays to large areas are often of value

CHAPTER XV

ERUPTIONS DUE TO DRUGS

ERUPTIONS DUE TO DRUGS (DERMATITIS MEDICAMENTOSA)

PROBABLY most of the drugs employed in medicine and just as many foods have at some time in some individuals produced skin eruptions The ceaseless introduction of new synthetic remedies and the incorporation of old ones in the imposing disguises of proprietary preparations make it impracticable to prepare a comprehensive list of drugs which are reported to have caused eruptions Fortunately such a list is unnecessary for a drug rash rarely gives a definite indication of its causative agent the majority of such eruptions being of the common toxic varieties Even so the abrupt one might say the unexpected appearance of the rash its distribution something unusual in the tint of the lesions and the frequent absence of constitutional symptoms may give clues to the etiology and naturally a working knowledge of dermatology facilitates the recognition of these features When considering etiological factors in toxic eruptions it is important to exclude by enquiry the possibility of drug origin In certain instances such as the use of a toxic drug like arsenic in large doses the appearance of a rash is looked for and when seen is accepted as a warning to suspend administration It is known that arsenic can be detected in the skin in cases of arsenical dermatitis and Wigley has reported a similar finding in three cases of gold dermatitis These observations suggest a directly related cause and effect but in many drug eruptions the drug cannot be found in the reacting skin nor does the local application of the drug incite further reaction so that other factors must be considered

Predisposing factors to drug eruptions

(1) *Increased susceptibility of the skin* This may be due to —

(a) *Idiosyncrasy* An innate peculiarity of the individual which becomes manifest by an exaggerated reaction to a dose within the normal therapeutic limits for normal subjects

(b) *Allergy* by which one means a specific hypersensitivity to a drug acquired by its previous administration It is often difficult to decide between this condition and idiosyncrasy since previous acquaintance with a drug may have been through a cough mixture aperient tooth paste colouring or flavouring agent or a preservative etc and it is also possible that sensitisation is occasionally acquired *in utero* Allergy and idiosyncrasy appear to explain most drug eruptions

(c) *Previous or existing disease of the skin* occasionally seems to determine the development or localisation of a drug rash For example acne appears to make an individual more likely to react to bromide with an acneform eruption and certain localised drug eruptions have been reported to have arisen on the sites of trauma and inflammation

(d) *Photo sensitisation* e g actinic provocation of sulphonamide eruptions

(e) *Nervous irritability* is regarded by some authorities as a factor of great etiological importance Certainly hyperidrosis and tremors of the fingers are common and may be associated with irritability depression and insomnia, but allowance must be made for the toxic effect of the drug on the nervous system for the discomfort produced by pruritus when present and for the anxiety caused by the alarming appearance of the rash

(2) *Concentration of the drug in the skin*

(a) *Preparatory to normal excretion* Excretion may be effected by the sweat or sebaceous glands or by exfoliation Histological studies have revealed that in some cases the reaction of the skin to a toxic drug is not confined to the excretory glands which probably play a minor part in the reaction As previously mentioned in the case of gold and arsenic deposits of the metals are found in the reacting skin and it would appear in such cases that the skin was attempting excretion and that the exercise of this function led to disaster

(b) *As a result of impaired excretion by the bowel and kidney* *A priori* this would seem to be an important factor in the causation of drug eruptions but in actual fact it is rarely so When administering toxic drugs however such as antimony arsenic bismuth gold or thallium it is important to exclude the presence of renal disease and by repeated tests for albuminuria to avoid continuance of the drug if evidence of renal damage appears

Mechanism of production of drug eruptions As mentioned previously many patients with drug eruptions do not react to the local application of the drug but only to its ingestion or injection which implies that the skin is not primarily reacting to the drug but to some sort of antibody or to a secondary allergen in the blood stream For instance Oriel showed that a patient who developed severe angioneurotic œdema after taking aspirin excreted a so called proteose in his urine and this proteose gave positive skin reactions in the patient and in other aspirin sensitive subjects In other cases substances in the nature of antibodies are produced and there is some evidence that these antibodies become fixed to dermal or epidermal cells and sensitise the cells to the drug or to a derivative of it Since the common types of drug eruptions are erythematous or urticarial the basic cause of such lesions is probably the triple response ' of Lewis because histamine or the H substance is produced when a drug damages any tissue If the exudation is marked the lesions become more urticarial and vesicles or bullæ may develop

Distribution of drug eruptions As the method of production of drug rashes is similar to that of toxic eruptions the distribution of the lesions is generally similar also Eruptions may be general or local

Generalised eruptions are rare (e g with arsenic quinine) and as a rule, the rash is scarlatiniform with varying degrees of desquamation or exfoliation but urticarial or morbilliform rashes also occur

The *localised eruptions* are usually symmetrical and either arise on the forearms face and neck or on the trunk A few drugs give rise to *fixed eruptions* (Plate 33) that is certain areas of skin constantly react to doses of the drug and by means of skin transplantations it has been shown that in the case of a fixed antipyrin eruption the epidermis was sensitised while with phenolphthalein the sensitivity resided in deeper undefined

tissues These fixed eruptions may be asymmetrical and at times are solitary Drug eruptions may appear on any part of the body

Types of drug eruptions The simplest and most frequent type of drug eruption is an *erythema* which may appear as small macules irregular areas or extensive sheets The eruption may be eczematous Sometimes reticular patterns are seen and circinate lesions like erythema multiforme in fact typical eruptions of the multiform type have been recorded as drug eruptions Rarely focal œdematous lesions like erythema nodosum occur Sometimes a brighter hue or a lilac or cyanotic tint marks a drug eruption probably because the drug affects the oxidation reduction potential of the blood and tissues or causes alterations in blood pigments Slight desquamation is common after acute erythematous eruptions and in severe cases especially after arsenic bismuth and gold exfoliation in coarse sheets is common

Drugs causing erythematous eruptions Adalin antipyrin atophan arsenic belladonna bismuth borax chloral copaiba hexamine iodoform mercury opium phenolphthalein phenacetin phenobarbitone pyramidon quinine salicylates salvarsan stramonium strychnine sulphonal sulphonamides veronal etc

Urticarial eruptions are also common and are usually morbilliform The lesions are raised according to the degree of exudate which when gross causes œdematous blotches resembling angioneurotic œdema Aspirin most frequently and iodides pyramidon and veronal occasionally produce such reactions Many of the urticarial eruptions are erythematous too and may simulate erysipelas aconite bromides and iodides are the usual causes and the erysipelatoid zone which often surrounds the pustular lesions of bromide and iodide eruptions is helpful in diagnosis

Adalin antipyrin bismuth chloral insulin *quinine salicylates* santonin sulphonamides serum etc also account for *urticarial eruptions*

Papular eruptions may occur with benzoic or boric acids and their salts digitalis eucalyptus mercury iodides etc

Vesicular and bullous eruptions usually arise upon an erythematous or urticarial base but occasionally especially when due to iodine or iodide clear vesicles or blebs appear with no obvious erythema

Drugs causing vesicular and bullous eruptions Aconite arsenic bromides chloral iodides mercury quinine veronal etc

Pustular eruptions may be sterile but usually result from the infection of vesicular and bullous lesions and are due to the same drugs Bromides and iodides produce follicular acneform or furuncular lesions through irritation of the follicles or by increasing their susceptibility to staphylococcal infection (Fig 194)

Granulomatous eruptions may appear during or after treatment with bromide or iodide

Purpuric lesions arise when any drug rash is sufficiently toxic and have been reported after chloral copaiba ephedrine gold iodides mercury stramonium etc

Lichenoid eruptions from gold arsenic mepacrine bismuth

Pigmentation of the skin is most common after arsenic (Fig 298) gold and silver while bismuth mercury and silver are apt to give pigmentary lesions in the mouth

Hyperkeratosis is almost invariably due to arsenic if it be of drug origin, it commonly affects the palms and soles (Fig 133)

Exfoliative dermatitis may occur after arsenic, gold bismuth barbiturates and the sulphonamides

Diagnosis The points previously discussed which are helpful in diagnosis may be summarised thus —

(1) The abrupt onset of the eruption

(2) The absence of constitutional disturbances as a rule

(3) *The symmetry of the eruptions with rare exceptions*

(4) Alterations in tint, the erythematous background being more vivid, or dull by the addition of lilac or cyanotic hues

(5) The history of previous or present medication with a drug Sometimes *e g* with arsenic, gold, iodide or bromide a latent period may occur between cessation of the drug and the appearance of the rash A chemical analysis of the urine blood skin, hair or nails may show the presence of the drug

(6) The peculiarity of certain drug eruptions facilitates recognition For example, the giant urticarial lesions of aspirin the acneform furuncular verrucose and nodular lesions of bromide and iodide the exfoliative pigmentary and hyperkeratotic lesions of arsenic, the lichenoid and scaly lesions of gold and the peculiar fixed eruption of phenolphthalein all have very suggestive features Reference is made to these in the list of common drugs and their eruptions which is appended

(7) Irritation is very variable, but in generalised eruptions is often sufficiently marked to differentiate them from the exanthemata Frequently irritation precedes the drug rash

Treatment *General* The first essential is to stop the drug when most of the minor eruptions quickly disappear Elimination may be hastened by saline aperients and there is some evidence that alkalies diminish the reactivity of the skin to irritants so that mistura alba has a two fold action In severe cases a vegetarian diet is indicated for its alkalising and detoxicating actions Extra vitamin C is helpful in some cases Alcohol increases the erythematous elements in skin eruptions and may facilitate the absorption of residual drug or toxic products in the alimentary canal and should be forbidden It may be advisable to restrict tea coffee and condiments In cases of bromide or iodide eruptions good results have been obtained by increasing the sodium chloride intake and by the use of 100 to 500 c c of normal saline given intravenously two or three times a week

Sodium thiosulphate is often given in arsenical dermatitis in doses of xv–xxx grains by mouth t i d or v–xv grains intravenously It may assist elimination if given within a week of the last dose of the drug but is of very doubtful value later on It may be tried in other metallic intoxications Intravenous injections of ascorbic acid 500 milligrammes daily for a week followed by smaller doses orally have proved very successful in arsenical dermatitis (p 569) Encouraging results are being obtained with new methods of chemically neutralising toxic metals after absorption

B A L, a preparation devised to counteract the effects of Lewisite gas which contains arsenic is dramatically effective in other forms of arsenical intoxication It is probably of value in poisoning from other metals

Local treatment The macular eruptions which respond quickly to withdrawal of the drug call for no special treatment but calamine lotion is a helpful placebo to which may be added liquor plumbi subacetatis fortis 1 per cent or if the lesions itch phenol 1–2 per cent The lotions of lead or of aluminium acetate are useful too with glycerine (3–10 per cent) if the skin becomes too dry When the dermatitis is severe and exfoliation makes the skin hard and taut oils creams and calamine liniment may be necessary As long as the applications are quite bland it is safe to experiment to discover the most suitable

Vesicular and bullous lesions are best treated with lotions and dusting

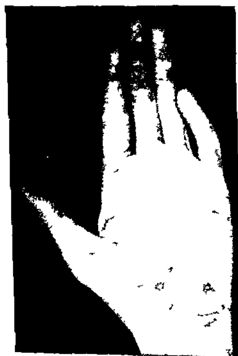


FIG 131 Arsenical keratosis Patient took arsenic for thirty five years

powders and pustular lesions with aniline dye lotions until they are dry

The granulomatous lesions of the halogen drugs are often resistant and small doses of X rays (150 r) have been recommended Salicylic acid ointment is useful for the palmar and plantar hyperkeratosis which occurs after prolonged medication with arsenic

List of drugs which may cause dermatitis medicamentosa The following is a list of common drugs arranged in alphabetical order and indicates the type of eruption each may produce Allowance must be made for considerable individual variation

Acetanilide may give an erythema with a varying degree of cyanosis

Aminophyllin may provoke fixed erythematous eruptions resembling toxic erythema or lupus erythematosus

Imidopyrine (*pyramidon*) and *antipyrin* eruptions are usually morbilliform, but erythema urticaria and occasionally vesicular and bullous lesions occur Fixed eruptions in the form of sharply defined erythematous plaques may follow ingestion of antipyrin by a sensitised individual

Arsenic by ingestion may cause erythematous or urticarial eruptions including allergic œdema of face and extremities, and later a mottled, rain drop pigmentation usually most marked on the trunk may appear (Fig 298) Hyperkeratosis diffuse or focal of the palms and soles is a peculiar feature of late development (Fig 133) and another rare delayed sequel is the warty papule which may become malignant Drugs of the salvarsan type given by injection produce more acute and serious eruptions and the erythema which usually begins on the flexural aspects of the forearms may quickly involve the face and neck and become generalised as exfoliative dermatitis Scales are shed in handfuls recovery takes months and a fatal issue is not uncommon (*vide* p 275)

Massive doses of vitamin C and painting the skin with an aniline dye has greatly improved the course and prognosis B A L (British Anti Lewisite) now promises dramatic results

The erythema arising about the ninth day after an arsenical injection is not a true drug eruption and should not interrupt treatment

It should be noted that arsenic and other toxic metals at times provoke herpetic eruptions but these are not drug rashes in any sense but are manifestations of a latent virus infection Other skin eruptions such as lichen planus may be provoked by these drugs

Aspirin gives rise to erythematous and urticarial rashes with local œdema which is apt to affect the eyelids with alarming rapidity Typical lesions of angioneurotic œdema may arise

Atophan (*cinchophen* B P) may produce erythematous patches or well defined raised plaques and occasionally causes œdematous lesions like aspirin

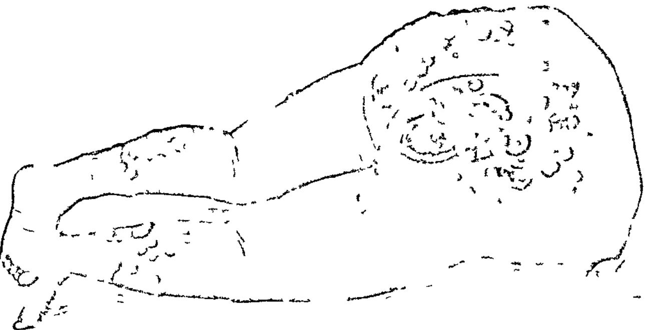
Belladonna usually causes a scarlatiniform erythema and absorption of the drug from eye drops or a plaster may produce the rash

Bismuth has given rise to many types of eruption but the erythematous type is most common although urticarial bullous lichenoid and purpuric lesions have been recorded

Borax may cause erythematous vesicular or scaly eruptions

Bromides frequently cause acneform lesions Small papulo pustules are common and are apt to develop into boils and carbuncles which are often sterile and have a bright erythematous flare around forming a rather characteristic picture Warty lesions occur and may present the appearance of aggregated pink flat warts or be moist and resemble small condylomata in which case the surface may be purulent and studded with small pustules Other lesions are so hypertrophic that they simulate fungating neoplasms and since such eruptions may arise some months after cessation of bromide medication diagnosis may be very difficult (Plate 31) Nodular lesions resembling erythema nodosum and blind boils and bullous or vesicular eruptions also occur Our own and reported cases indicate that babies may develop bromide eruptions *in utero* or from their mothers milk

PLATE XI



Bromide Eruption in an Infant

Aminophyllin may provoke fixed erythematous eruptions resembling toxic erythema or lupus erythematosus

Amidopyrine (*pyramidon*) and *antipyrin* eruptions are usually morbilliform, but erythema urticaria and occasionally vesicular and bullous lesions occur. Fixed eruptions in the form of sharply defined erythematous plaques may follow ingestion of antipyrin by a sensitised individual

Arsenic by ingestion may cause erythematous or urticarial eruptions, including allergic œdema of face and extremities, and later a mottled rain drop pigmentation usually most marked on the trunk may appear (Fig 298). Hyperkeratosis diffuse or focal of the palms and soles is a peculiar feature of late development (Fig 133) and another rare delayed sequel is the warty papule which may become malignant. Drugs of the salvarsan type given by injection produce more acute and serious eruptions and the erythema which usually begins on the flexural aspects of the forearms may quickly involve the face and neck and become generalised as exfoliative dermatitis. Scales are shed in handfuls, recovery takes months and a fatal issue is not uncommon (*vide* p 275)

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Atophan (*cinchophen*, B P) may produce erythematous patches or well defined raised plaques and occasionally causes œdematous lesions like aspirin

Belladonna usually causes a scarlatiniform erythema and absorption of the drug from eye drops or a plaster may produce the rash

Bismuth has given rise to many types of eruption but the erythematous type is most common although urticarial, bullous, lichenoid and purpuric lesions have been recorded

Borax may cause erythematous vesicular or scaly eruptions

Bromides frequently cause acneform lesions. Small papulo pustules are common and are apt to develop into boils and carbuncles which are often sterile and have a bright erythematous flare around forming a rather characteristic picture. Warty lesions occur and may present the appearance of aggregated pink flat warts or be moist and resemble small condylomata in which case the surface may be purulent and studded with small pustules. Other lesions are so hypertrophic that they simulate fungating neoplasms and since such eruptions may arise some months after cessation of bromide medication diagnosis may be very difficult (Plate 31) Nodular lesions resembling erythema nodosum and blind boils and bullous or vesicular eruptions also occur. Our own and reported cases indicate that babies may develop bromide eruptions *in utero* or from their mothers milk

Carbromal B P (Adalin) may cause itching patches and Majocchi's type of purpura

Chloral usually produces a transitory scarlatiniform erythema widely spread and affecting the extensor aspects of the limbs Papules vesicles pustules and purpuric lesions have also been reported and rarely affection of the mucous membranes

Chloroform inhalation may give rise to fleeting erythematous eruptions and rarely to purpuric lesions

Copaiba and *cubebs* medication may be followed by dark red or purpuric macules or petechiæ affecting the lower part of the trunk and the extremities More extensive eruptions suggesting scarlet fever or measles occur but itching is common Febrile states and congestion of the fauces may increase the resemblance to an exanthem (see Plate 32)

Devegan may produce a fixed eruption of erythematous type

Digitalis has been credited with erythematous macular and papular rashes

Ephedrine may cause erythematous urticarial and purpuric lesions which are paradoxical since this drug is occasionally successful in quickly relieving urticarial eruptions due to other causes A reasonable explanation is the production of a toxic (secondary allergen) as previously described

Eucalyptus in a case described by Oppenheim gave rise to a bright red and brownish red papular eruption mainly affecting the extremities associated with slight irritation

Gold eruptions are erythematous like those of arsenic and often scaly purple brown or pink guttate lesions like pityriasis rosea may occur on the trunk and be followed by very persistant lichenoid infiltration and a dusky pigmentation Light sensitisation is common after gold and subsequent exposure to actinic light may produce a permanent pigmentation termed chrysiasis

Guaiacum may cause blotchy erythematous plaques

Hexamine may produce erythematous or urticarial rashes

Iodides are responsible for the greatest variety of eruptions in fact the lesions exhaust all the possible reactions of the skin i e erythema urticaria papules vesicles pustules bullæ œdema localised and diffuse purpura acneform furuncular or carbuncular warty and hypertrophic lesions with nodules and tumours Many of these reactions may be indistinguishable from bromide lesions but bullous and œdematous eruptions are much more common with iodide (Fig 134) Often small shotty papules arise and become surmounted with vesicles which pustulate and resemble variola lesions and likewise show predilection for the face and extremities Gross œdema of one or both eyelids may occur especially when pustular lesions affect the lids Localised red œdematous areas like erythema nodosum may arise on the extensor aspects of the limbs and more rarely on the face and trunk A bullous eruption may rapidly become gelatinous and organised to form a granulomatous mass The tumours or iodide granulomata may show a vegetating surface suggesting squamous celled epithelioma mycosis fungoides or pemphigus vegetans or resemble a fungating sarcoma or cutaneous blastomycosis

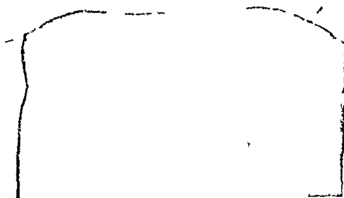
Granulomatous iodide eruptions are of serious significance and we have had several cases end fatally in spite of treatment It is wise in

PLATE 32



COLAIBA ERUPTION

PLATE 33



MIXED ERUPTION   THE SOLFHHATLIN

[T f p 8

erythematous and urticarial eruptions. The trunk is most often affected and the rash is patchy and may be reticular. Generalised scarlatiniform rashes and punctate erythemata like German measles occur, but *a lilac or cyanotic tint* may generally be observed. Severe exfoliative dermatitis with fatal termination has been reported after phenobarbitone, and autopsy has revealed toxic lesions and inflammatory processes in many organs, thus indicating that the skin eruptions are but the outward visible signs of a widely spread systemic reaction.

Phenolphthalein eruptions are erythematous with a violet tint as a rule and may show brownish discoloration. Vesicles and bullæ may arise on the areas. The same sites may invariably react to further ingestion of the drug by a recurrence of the eruption, and for this reason such reactions are termed "fixed" eruptions. In one of our cases eruptions of this type occurred on a man's face; the lesions twice followed ingestion of phenolphthalein disguised in a chocolate laxative tablet. Sharply defined discs or circinate macular lesions are occasionally seen on the lower part of the trunk, buttocks and thighs. Vesicular and ulcerative lesions of the buccal mucosa have been reported (see Plate 53).

Quinine usually produces a scarlatiniform eruption with fever and later desquamation, mild or severe. The minute dose which may produce the rash in sensitive individuals emphasises the factor of idiosyncrasy previously discussed.

Urticarial, bullous and eczematous reactions have also been recorded.

Santonin may cause œdematous and urticarial eruptions.

Serum and foreign proteins most commonly give rise to urticarial eruptions arising from the sixth to the tenth day after the injection. Constitutional disturbances are usual and include fever, malaise, headache, vomiting and joint pains. Erythematous rashes are also common, alone or with the urticarial lesions which may be of the giant type. Any part of the body may be involved, but either the trunk or the extremities are the sites of election. Variations in the time of onset and the types of rash are frequent. Sequeira had a case of severe urticaria lasting six months after an oral dose of horse serum given to prevent bleeding; the rash in this case appeared within twelve hours of taking the serum.

Silver nitrate may, after prolonged absorption, cause slate blue discoloration of the skin termed argyria and due to the deposition of silver in the skin.

Sulphonamides. Sulphonamides have produced a wide variety of skin lesions and toxic effects. The common eruptions are scarlatiniform or morbilliform, patchy or generalised, and exfoliation may occur. These rashes are often associated with fever. Fixed erythematous eruptions have been described and lesions resembling erythema nodosum. The sulphonamides are apt to sensitise the skin to light and then dermatitis only follows exposure, but once provoked the actinic dermatitis may behave like a drug eruption. Cyanosis has often been reported in sulphonamide therapy and appears to be dependent upon the production of methæmoglobin, but the mechanism of this reaction is not clearly understood. The cyanosis is dramatically cured by the administration of methylene blue, ¼ gramme intravenously.

The kidney is sometimes damaged by sulphonamides with resulting

suspected cases to do a skin patch test with iodide rather than to give the drug by mouth by way of therapeutic test

Mepacrine produces hypertrophic warty lesions suggestive of lichen planus verrucosus The early lesions appear as eczematous or seborrhœic manifestations, but in course of time change to a pigmented lichenoid dermatitis which may persist for a year or more It is usually extensive and includes the face, neck, and mucous membranes where the lesions



Fig 134 Iodide eruption in a patient suffering from cardiac disease

resemble those of lichen planus Very hypertrophic warty lesions suggestive of lichen planus verrucosus may occur The condition must not be confused with chronic purpuric lichenoid dermatitis (p 271) There has been complete loss of hair

Mercury may produce erythematous eruptions like those due to arsenic *Boils* are not uncommon during medication with this drug but appear to be due to diminished follicular resistance and not solely to the drug

Opium and its alkaloids may cause scarlatiniform or urticarial rashes which usually itch and may desquamate

Phenacetin in rare instances produces erythema or urticaria

Phenobarbitone (*luminal, medinal*) and other *barbiturates* may cause

GROUP 4

DERMATOSES DUE TO EXTERNAL IRRITANTS

CHAPTER XVI

DERMATOSES DUE TO MECHANICAL AND PHYSICAL AGENTS

THE normal skin is specially constructed to withstand a moderate amount of irritation but in certain conditions some congenital and some acquired the resisting power is defective The most remarkable examples of an inherited low resistance are seen in the conditions called epidermolysis bullosa already discussed (p 42) in which the least pressure or friction causes an outbreak of blisters and in the Ehlers Danlos syndrome (p 67) But short of these there are numerous slight anomalies which render the skin peculiarly vulnerable Some of these will be mentioned incidentally in this chapter but we are here specially concerned with the eruptions which physical and chemical irritation may excite in a normal or apparently normal skin

It has already been indicated (p 147) that there are two types of reaction to external irritants which are included under the term dermatitis The more severe reaction—traumatic dermatitis—is akin to a burn and will occur in any skin exposed to such irritants as strong acids and alkalies and chemicals The less severe and by far the commoner is a reaction of an inflammatory catarrhal character indistinguishable from an eczema of constitutional origin Some authors would apply the label eczematous dermatitis to this condition Such a reaction may develop in a sensitive or debilitated skin and not in a normal skin or it may be the result of idiosyncrasy i e some personal and incalculable peculiarity for which no reasonable explanation can be offered Finally this type of reaction may be the result of long continued wear and tear upon a reasonably normal skin and this is the explanation of a large proportion of the cases of industrial dermatitis

Affections Due to Mechanical Irritation of the Skin

Blows contusions pinches friction and scratching may cause several kinds of lesion

Erythema or acute congestion is produced by a slight injury There is local redness with perhaps slight swelling heat tenderness and itching The colour disappears on pressure Lesions of this type rapidly disappear Prolonged pressure over bony prominences is the cause of erythema paratrimma the first stage of the bed sore

Wheals come next to erythemata in severity The lesion is at first red from capillary dilatation but later is pale from œdema and is surrounded by a reflex arterial flare This is the triple reaction ' described by

anuria or hematuria, and one would expect this damage to aggravate or induce skin eruptions *but this inference is not supported by clinical* observations The damage may prove fatal

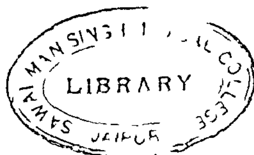
The occasional occurrence of agranulocytosis and leucopenia should be noted as an indication to control sulphonamide therapy by examinations of the blood

Suramin (*antrypol*, Bayer 205) *germanin* may give rise to erythematous morbilliform rashes

Veronal may cause itching eruptions of erythematous or urticarial types *with œdema and constitutional disturbance Vesication crusting* and desquamation may follow

Eruptions have also been attributed to the following drugs which by no means comprise an exhaustive list —

Aconite alcohol antimony benzol bromural calcium sulphide cannabis indica, cantharides capsicum castor oil, chloralamide cocaine cod liver oil creosote, D D T ergot iodoform ipecacuanha phosphorus pilocarpine, potassium chlorate, rhubarb salol, stramonium strychnine, *sulphonal tar valerian etc*



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Lewis There is a sensation of burning and itching or tingling The skin is in a condition of hyperæmia and œdema A smart blow as with a whip or cane produces a wheal It must be remembered that excessive wheal formation upon slight irritation is characteristic of urticaria (*vide* p 257)

Ecchymoses and petechiæ *are effusions of blood into the skin*, the common bruise is the familiar type Blows and pinches are the usual cause of these hæmorrhages The colour does not disappear on pressure and the stain may persist for some time going through a series of changes in tint Pinches of the end of the finger may lead to subungual hæmorrhage and cause the loss of the nail

Blisters or bullæ may also form from injury but friction is the most common cause as in the blisters on the hands from the use of unfamiliar *tools, rowing etc* The epidermis is raised by an effusion of serum but sometimes the bleb contains blood Excessive blister formation from slight traumatism is a characteristic of epidermolysis bullosa

Abrasions and excoriations are superficial breaches of the surface due to friction and to scratching It is necessary to bear in mind that there *is often some itching affection e g scabies which may be the cause of the* patient scratching and also that abrasions may be produced artificially by hysterical patients or malingerers

Hypertrophies Recurrent mechanical irritation causes a hyper keratosis—*i e* a thickening of the horny layer which when localised is called a callosity (p 297)

Tattooing The figures are produced by the introduction into the skin of Indian ink indigo and vermilion Accidental tattooing may occur from *the use of hypodermic needles with particles of carbon adhering to the* needle after being held in a match flame or from a rusty needle (Weber) A more common traumatic variety is seen after dirty abrasions (gravel rash) or blast injuries when dirt is driven into the skin Infection of the tattoo marks with syphilis and tubercle is not very uncommon Cheloid may also occur

The dermatologist is sometimes consulted as to the possibility of the removal of tattoo marks In some cases the pigmented areas can be *excised and skin graft applied* and *this is the most satisfactory method* Multiple incisions and curettage of the under surface of thin skin flaps followed by resuture result in improvement, but it is very difficult to detach foreign pigment from the tough fibrous tissue which has imprisoned it

Lacassaigne and others have obtained good cosmetic results by very close cross scarification followed by the application exactly to the scarified area of finely powdered permanganate of potash to form a continuous homogeneous layer This is rubbed in sufficiently hard to produce bleed ing *Dry dressings are then applied and removed as little as possible until* the crusts fall spontaneously

Pseudotuberculoma silicoticum This is a tumour arising in a scar containing particles of silica almost invariably consequent upon a *fall and graze* of the skin Details of the following patient seen by one of us *indicate* the main features A woman aged 40 had a scar on her right palm due to falling in the road twenty four years previously *In this scar* a pea sized tumour arose of six months duration and was diagnosed as a possible fibro sarcoma *Histological report suggested tuberculosis* but

further careful examination showed that the tumour was a foreign body giant cell and histiocytic reaction containing particles of silica some of which were in the giant cells and were readily seen on examination under polarised light

The condition was first reported by Shattock S C *Proc Roy Soc Med* 1916–17 Section of Pathology p 6 See also Faulds J S *Journ Path and Bacteriol* 1935 xli p 129

Intertrigo

Intertrigo or chafing is the name given to lesions produced by the friction of two opposed surfaces of skin

It is commonest in babies and may be due to excessive fatness The worst cases however occur in neglected infants (Fig 135)

The regions affected are the groins the sides of the scrotum and the flexures of the thighs Here the irritation of the urine and fæces and improper cleansing of the parts are important factors *Intertrigo in the folds* of the neck caused by the irritation of fluid food is also seen in young infants

Intertrigo also occurs in the obese adult the parts affected being the groins the gluteal cleft and in fat women the submammary folds Colliers labourers and others engaged in dirty work and soldiers on active service who are unable to attend to personal hygiene are frequent sufferers Factors of general debility may need attention in these cases and glycosuria by reason of its general and local effects must always be excluded

The friction first produces an erythema and the moisture due to retained perspiration or irritating urine and fæces causes the sodden horny layers of the epidermis to be removed with the result that a raw oozing surface is formed

Infection by micro organisms may lead to ulceration and to a spread of the inflammation beyond the areas first involved

Lesions suggesting intertrigo in the groin and between the toes are often due to infection by a fungus and a so called intertrigo in the sulcus between the ear and the scalp may be caused by pus cocci The term intertrigo qualified by such adjectives as pus coccal seborrhœic or mycotic is a convenient indicator of dermatoses in these regions

Erosio interdigitalis blastomycetica (Fabry) This name is given to a troublesome condition occurring chiefly in dish washers and frequently in negresses and Jewesses according to American authors The webs between the ring and middle fingers of both hands and other interdigital spaces are affected The erosion extends for about half an inch along the adjacent sides of the digits It has an undermined white sodden border which is easily raised The floor of the ulceration is red and glazed Similar conditions have been seen in other flexures It is suggested that they are due to infection with yeast like organisms (*vide* Moniliasis)

Treatment The parts must be carefully cleansed and irritant soaps must be avoided

Calamine liniment or dusting powders are applied Bismuth subgallate alone or with 25 per cent of zinc oxide and talc is also useful Dusting powders are applied after washing A useful powder is made of equal parts of oxide of zinc and powdered starch or talc If the parts are

ulcerated, a little calomel, 1 in 10 may be added to the powder, or boric acid ointment or a mild mercurial ointment (hydrarg oxid flav grs 15 to pasta zinci ℥i) may be applied

A useful lotion is liq picis carbonis ♏xx, acid tannic grs xx, aq ad ℥i

With persistent or recurrent intertrigo the various aniline dyes, as



Fig 137 Intertrigo

brilliant green and gentian violet are often valuable, probably by dealing with secondary saprophytic infection Fractional doses of X rays are also most valuable in adults

Napkin Erythema Ammonia Dermatitis

In babies eruptions due to local irritation but differing from intertrigo in affecting the convex surfaces are common *The eruption is of a dark red colour* and the surface is smooth and shining It is confined to the convex surfaces of the buttocks the lower part of the back the backs of the thighs the calves and heels and the perineum and scrotum and vulva that is parts in contact with the napkin Secondary smaller lesions may appear on the trunk *The flexures are free* from the eruption

Moist flat topped papules up to 1 cm in diameter may arise on this dermatitis especially in the region of the genitals and convex surfaces of buttocks *They are discrete and commonly ulcerate and closely resemble* the syphilitic condyloma in appearance

Jacquet describes several stages of the affection (1) erythema (2) erythema and vesication (3) papules and (4) ulcers Brocq believed that the eruption was caused by streptococci There is no doubt that micro organisms found in the stools and over the buttocks have the power to split urea and produce ammonia and that this is the irritant There is

often a strong smell of ammonia after the infant has wetted the napkin during sleep and it is now generally recognised that ammonia is the primary cause The more severe papular and ulcerated lesions are doubtless due in part to secondary microbic infection

These conditions are common in neglected infants seen in hospital and dispensary practice but they are occasionally met with in well tended babies

It will be seen that the eruption is confined to the parts which are in contact with the napkin and neglect in changing is the common cause In some infants however the excreta appear to be extremely irritating and the cause of this is usually gastro intestinal trouble

Diagnosis These eruptions are of considerable importance from the

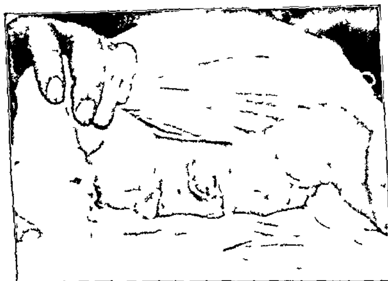


Fig 136 Napkin erythema (the actual flexures are unaffected)

point of view of diagnosis because they are frequently erroneously called congenital syphilis They have also to be distinguished from intertrigo from seborrhoeic eczema and from impetigo

Differential diagnosis of the eruptions in the napkin region ' —

The *napkin dermatitis* is dark red and shining and diffuse It affects the convex surfaces buttocks back back of the thighs and calves and the perineum and scrotum avoiding the flexures themselves These are parts actually in contact with the napkin

Congenital syphilis The eruption is of small coppery red infiltrated papules not specially confined to the napkin area but often condylomatous in the moist flexures round the anus The palms and soles are often affected and there may be lesions on the face There are snuffles and a peculiarly wizened expression of the face The specific eruption comes out from three to five weeks after birth and the napkin erythema often starts later

Intertrigo is distinguished by the lesions beginning in the flexures of the groins thighs and elsewhere The eruption may, however spread on to the convex surfaces, but the flexures themselves are always affected and show the deepest colour which fades at the periphery

"*Seborrhœic*" *dermatitis* may affect the napkin region The areas involved are well defined and moist, and are usually covered with a greasy scale of a yellowish colour The lesions may also be found in other flexures particularly in the axillæ and it is common to find that the child's mother has pityriasis capitis

Impetigo may complicate the napkin erythema or intertrigo Vesicles and pustules occur and in a part subject to irritation they rupture early and produce raw oozing surfaces Frequently evidence of impetigo of the common type is present elsewhere or there may be other cases of pus coccal infection in the family

Yeast infections Mycotic infections are uncommon in infants but pathogenic yeasts may give rise to scaly, dull red macules in the peri anal region or extending to the buttocks and thighs The well defined scaly edge may suggest tinea

Monilia infection of the napkin area is often associated with buccal moniliasis (thrush)

Treatment of napkin erythema The treatment is on the same lines as that of intertrigo The parts must be kept clean and no irritant soap should be used Lotions of boric or tannic acid are useful Protection of the affected areas is best obtained by the application of vaseline or liquid paraffin, for unlike the vegetable oils they are unaffected by the strongly alkaline urine or by Lassar's paste (zinc oxide 24 parts powdered starch 24 parts salicylic acid 2 parts and vaseline 50 parts) If there is ulceration boric acid ointment or ung hydrarg ammoniat 5 grs to the ounce of a paraffin base may be used with advantage

The production of ammonia in wet napkins can be prevented by giving the infant small doses of hydrarg cum cret and by having the washed napkins rinsed in 1 in 4 000 hydrarg perchlor solution or in a saturated solution of boric acid before drying to inhibit the growth and activity of the organisms which hydrolyse urea producing ammonia

Scratched Skin

Scratching of the skin produces excoriations or denudations of the epidermis as deep as the stratum mucosum These are common epi phenomena of the itching diseases such as scabies pediculosis eczema strophulus, and the prurigos They are also met with in the rare diseases mycosis fungoides and leukæmia cutis The excoriations are usually linear but where the primary eruption is papular the tops of the papules are scratched off and small blood crusts form at the apices In some rare conditions the scratching is deep the patient endeavouring to tear out the irritating spots The worst lesions of this kind we have seen were in a case of leukæmia cutis Infection of the abrasions by pyogenic cocci causing impetigo boils etc is common Prolonged scratching causes pigmentation and thickening of the integument and sometimes "lichenisation" The last term is applied to a chronic thickening of the skin with exaggera

tion of the normal lines enclosing minute elevations of the skin producing a quadrillated surface which resembles shagreen leather (*vide* p 175) In chronic generalised prurigo discrete papules and even nodules may appear as a result of intense and persistent scratching

The *treatment* of the scratched skin is the treatment of the cause The irritation should be allayed by destroying the itch parasite or the pediculi by appropriate treatment in eczema etc If the cause can be removed the itching ceases and simple soothing remedies rapidly heal the excoriations Phenol or liq picis carbonis 1–3 per cent in lotions or creams is a valuable antipruritic Local anæsthetics are best avoided For the more chronic conditions emollient ointments and keratolytic preparations to destroy the thickened horny layers are necessary (*vide* Formulæ) Applications of the X rays and of the Kromayer lamp are sometimes of great service Sedatives such as bromide and luminal are often very helpful the latter drug appears to depress the scratch reflex

Cracked finger ends Exposure and rough work may cause painful cracks about the ends of fingers and thumbs and some folk are very prone to such cracking especially in winter It is a source of disability and may allow entry of infective organisms Protection of the finger ends by elastoplast or by plastostrip (an antiseptic tape which adheres to itself and not to the skin) is helpful and is a necessary protection in certain industrial processes Cracks are well treated by filling them with cobbler s wax Durofix or collodion and may be prevented by salicylic acid ointment or the constant use of an emollient cream

Callositas (Lat *callus*) A callosity is a localised hyperkeratosis or thickening of the horny layers of the hands and feet due to friction

Etiology Frequently *recurring* friction and pressure cause callosities The horny patches on the hands are produced by the use of tools those on the feet by badly fitting boots or orthopædic deformities Slighter degrees of hyperkeratosis are seen on the fingers of players on stringed instruments *e g* harpists violinists

Pathology The lesion is a hypertrophy of the corneous layer of the epidermis—a reaction to frequently repeated irritation

Clinical features The callosity is a horny raised flat plaque of a yellow or greyish colour As a rule there is no inflammation but occasionally suppuration occur The hand lesions are painless but those on the soles may be tender and cause great discomfort in walking

Treatment is rarely required except when they occur on the sole If removal be called for the parts are soaked in hot water and pared down with a sharp knife The salicylic plaster (Leslie s) or salicylic collodion regularly applied will remove the horny layers A single dose of 400 600 r of X rays will often cure the condition but preventive measures such as the avoidance of ill fitting shoes socks etc should be advised

Clavus or corn A corn is a small circumscribed and painful over growth of the horny layer of the epidermis of the toes and soles *i e* a focal callosity

Etiology Friction and pressure from tight or badly fitting boots are the exciting cause but doubtless a predisposition exists in the skin

Pathology The corneous layer is hypertrophied as in the callosity but here forms a horny plug composed of a conical mass of epidermal cells

whose apex projects deeply into the papillary layer, elongating and narrowing the papillæ The pressure of this horny plug causes the pain

Whitfield states that corns only arise over subluxed joints which by pressure cause aneurysmal dilatation of papillary capillaries from which the hypertrophy arises

Clinical features Corns are round, flat elevations of the skin on the toes and soles They are often multiple Except when they exist between the toes corns are hard and horny, but in the interdigital spaces they are soft and whitish in colour from the maceration of the epidermis by warmth and moisture These interdigital lesions are sometimes warts and not true corns Whether hard or soft they are painful and tender, and in many instances variations in the temperature especially cold and damp cause spontaneous pain

Treatment After softening in hot water, the hard corn may be pared down with a sharp knife and the conical plug removed with the point A corn plaster a ring of thick plaster worn over the area to relieve the parts from pressure will often effect a cure Salicylic acid collodion (1 in 5) painted on for several nights, followed by soaking in hot water often removes the hard corn

Soft corns may be pared down or treated with the salicylic collodion the toes afterwards being kept apart by a pledget of cotton wool powdered with 3 per cent salicylic acid in a base of zinc oxide and talc The treatment of painful corns requires much patience and gentleness and the help of a registered chiropodist is invaluable Pain is often relieved by X ray therapy in doses of 150-200 *r* through 1 mm aluminium filter and not localised to the corn After removal it is imperative that properly fitting boots and socks be worn or the corns will recur Ingram gives a single unfiltered dose of X rays (1 000 *r*) exactly to the corn with good results

Feigned Eruptions Dermatitis artefacta

Dermatitis artefacta is the name applied to an eruption produced by the patient to excite sympathy or to evade work In civil practice the subjects are usually hysterical girls and women paupers and others desiring admission to hospitals and infirmaries and workpeople anxious to obtain compensation under the Workmen's Compensation Act In the Services the eruption is produced by men who want to obtain their discharge A number of cases have been seen in men desiring to evade military service Ormsby is of opinion that in some of the so called hysterical cases the acts are subconscious

The lesions are produced in a variety of ways sometimes by friction scratching with the nails etc and in other instances by the deliberate application of irritants such as alkalies acids cantharides phenol croton oil tobacco juice and mustard It is often very difficult to determine the means employed and the patient naturally uses every artifice to escape detection

Clinical features All varieties of dermatitis may occur the type depending upon the irritant employed Friction scratching with the nail and with sharp instruments such as scissors cause abrasions and even

superficial ulcers Deeper lesions are generally produced by caustics and acids Sometimes the destruction is so great that virulent bacterial infection is suspected The lesions are erythematous bullous ulcerating or even gangrenous

They generally present features which strike an experienced eye at once but occasionally it is extremely difficult to make a diagnosis The points upon which stress should be laid are —

(1) The lesions do not conform to the known types of skin disease

(2) They are in parts which can be seen by the patient and reached by the patient's hands The left side is more commonly affected than the right owing to most people being right handed

(3) The lesions are remarkably circumscribed the surrounding skin being normal Their outline is often rectangular linear angular or circinate while pathogenic lesions are rounded or ovoid

(4) In the hysterical there are often changes in the field of vision anæsthesia of the palate and of the stocking and glove areas and occasionally hemianæsthesia may be demonstrated These are probably induced suggestion phenomena



Fig 137 Dermatitis artefacta

The photograph (Fig 137) illustrates an exceptional case It shows the leg of a young girl in whom the lesions were remarkable for their arrangement in sets of three all of the same length and equidistant They consisted of rather deep longitudinal abrasions covered with dried blood and small crusts formed by dry exudation Recent lesions and the stains of older abrasions are well shown in the photograph The patient had complete anæsthesia of the palate and right hemianæsthesia affecting the face limbs and trunk with the exception of a spot the size of a shilling over the right eyebrow where sensation was normal It was suggested that the excoriations were produced by a three pronged fork but scratching by the finger nails might have caused them

Another patient had ulcerative lesions on the right arm probably produced by caustics One ulcer the size of a half crown was well defined and covered with dried blood Some of the smaller spots resembled vaccination lesions Below these were areas of simple erythema There was complete anæsthesia of the palate The patient was twenty six years of age She was an inmate of an inebriates home for the cure of the chlorodyne habit

Occasionally patients tie ligatures round a limb producing chronic *œdema or more serious changes*

An interesting case was a maternity nurse who produced blisters with liquor epispasticus on the right hand and fingers She had stocking and glove anæsthesia and was for a long time supposed to be suffering from syringomyelia She gave the history that she had submitted to the *removal of the nails on eighteen occasions for whitlow* By covering the affected areas with an occlusive dressing and gradually increasing its size the blisters appeared higher and higher up the limb until the neck was reached By a ruse a small bottle labelled adrenalin and cocain was found in the patient s possession She insisted that she used this for her asthma but an examination of its contents proved it to be blistering fluid She indignantly denied an association between the lesions and the cantharides

Plate 34 shows the breast of a young maidservant with characteristic lesions and numerous scars She presented the stigmata of hysteria The nature of the agent used was not discovered It is interesting to note that *she had had a laparotomy performed for supposed gastric ulcer*

Napoli has shown that a bullous dermatitis was produced by Italian soldiers by the local application of the leaves of *Ranunculus acer* to the skin The root of *Daphne gnidium* and juice of cactus leaves were also used (Caraccio) to simulate skin disease

The acute ulcerations should be tested with litmus paper to detect the presence of strong acid or alkali

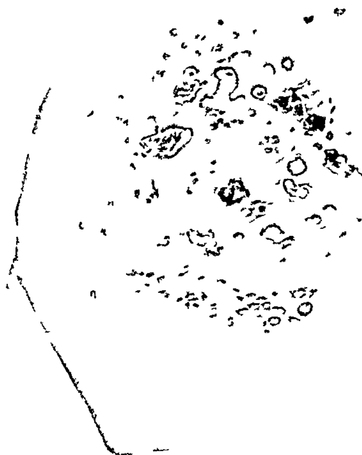
These cases are not uncommon and may give rise to great difficulty The patients are unreliable witnesses and they refuse to confess by what means the dermatitis is produced and they have been known to submit to *extensive operation rather than acknowledge that the lesions were self inflicted* Moreover it is often surprisingly difficult to get the patient s friends to believe that the physician is taking a correct view of the case One mother insinuated that Sequeira was in collusion with the dermatologists at two other general hospitals because he at once suggested the cause of her daughter s trouble She believed that her unfortunate child was the object of persecution on the part of the hospital doctors

Dr Dore has reported a case in which the patient was described by a mental expert as having a dual personality

A feature which is forcibly brought out in the histories of several cases is that some slight traumatism a small burn or wound often appears to suggest auto infliction of injuries to the patient The worst type of malingerers seen in civil practice are those who have some dermatitis produced by *their employment and continue to keep up the irritation* The payment of five pounds to a servant employed in a large institution as compensation for dermatitis alleged to be caused by irritant soap and alkalies led to an epidemic of similar cases which came under our notice

Treatment Early recognition of the affection by the physician the prescribing of some impressive local application and of a bromide and valerian mixture and an authoritative expression of opinion on prognosis may so impress the patient as to effect a cure without entering into any discussion as to the nature of the ill Simple protection of the lesions leads to their rapid healing but the patient finding that she is the object of suspicion by one doctor may pass on to another In all cases removal

PLATE 34



[illegible] (DERIVATIVE ARTEFACTS)

[illegible] She had [illegible] collection performed [illegible] [illegible] operation

[To face p. [illegible]



from the anxious care of credulous friends and relatives is important and the discipline and routine of hospital often prove of great value

Malingering should of course be exposed and treated as an offence Hysterical cases however call for careful handling In many as shown by MacCormac the phase is expressive of mental conflict anxiety or agitation which will pass causing the patient no harm and often being blotted out of her memory The improper handling of such cases though it may stop the dermatological manifestations of disorder may be responsible for more serious happenings The approach to and handling of the problem of hysteria should be along the recognised lines of psycho logical practice and should generally be left to the expert in that branch of medicine

DERMATOSES DUE TO COLD

The local changes met with as a result of exposure of the body or part of the body to intense cold are —(1) freezing of the soft parts (2) changes in the vascular supply

Intense cold is used in the treatment of nævi warts and the like by liquid air and by solid carbon dioxide The application of the freezing agent is followed by an immediate shrinking of the parts with the formation of a white pellicle In a few minutes the parts resume their natural size and appearance and at the end of from two to six hours vesication and the formation of bullæ occur If the duration of freezing has been pro longed and especially if pressure has been applied at the time as with the solid stick of carbon dioxide there may be superficial sloughing or ulcera tion which may take several days to some weeks to heal If the application be not prolonged above thirty or forty seconds the resulting cicatrix is scarcely noticeable (see p 756)

Frost Bite

Frost bite is caused by freezing of the superficial tissues The skin of an area *e g* an ear a finger or a toe may be frozen hard and no ill effects may follow thawing More commonly after thawing the skin becomes red and swollen and covered with blebs containing clear serum later parts of the skin and deeper tissues may die and come away as a scale or a dry gangrenous mass The extent of the damage depends on the duration of the cold and its intensity During the process of thawing the patient com plains of intense pain and when the pain dies away tingling and itching follow Healing is attended by an inflammatory reaction The result of such lesions is great deformity if the nose or ears are affected Histo logically it is found that the affected cells are swollen and the superficial nerves are believed to degenerate Ulcerating lesions are treated on ordinary lines with antiseptic dressings Surgical interference may be required

Trench Foot Immersion Foot Shelter Foot etc

Trench foot is due to changes in the vascular supply After exposure to a less degree of cold over comparatively long periods especially in damp

of thick boots and gloves and woollen stockings is important, and hot water must be used for washing

No best treatment for chilblain exists Erythema pernio is the outward sign of the inability of the skin including its small blood vessels to adapt itself to low temperatures The endocrine glands through the vegetative nervous system control the skin vessels which should compensate for loss of heat and therefore thyroid extract or polyglandular therapy may be the most successful line For the same reasons sedatives are useful when emotional states disturb endocrine balance Perhaps it is the toxic effect upon the same systems which occasionally makes septic or tuberculous foci of etiological importance Calcium and its complement vitamin D diminish the excitability of nerve endings and also retard the exudation which accounts for the oedema tension and irritation thus the mineral the vitamin or both together often have a rapid beneficial effect but may fail completely for obvious reasons Other vitamins *e g* C nicotinic acid and P and K appear to be essential to capillary function and avitaminosis is bound to be of etiological importance in chilblain General ultra violet light by improving metabolism and making vitamin D in the skin is excellent therapy High protein diet increases the metabolic rate and body heat and so is indicated with adequate minerals and protective foods Massage vigorous exercise and physiotherapy will improve the peripheral circulation and local heat loss must be prevented from dislocating local control by suitable clothing Emollients, antipruritics and mild counter irritants are the basis of local treatment which is the least important



Fig 138 Livedo reticularis in an infant

X rays in doses of 100–150 *r* often rapidly relieve the irritation and the acute congestion Three doses may be given at intervals of one or two weeks to a total of 400 *r*

If the chilblain is broken the parts must be kept at rest and dressed with boric acid ointment or iodex Fomentations of boric lint are useful if there is ulceration and sloughing

Livedo reticularis, Livedo annularis These names are given to a reticular or annular purplish mottling of the skin occurring in certain

subjects from exposure to cold It is common in children who are other wise quite healthy In tuberculosis syphilis rheumatism alcoholism and hypothyroidism the condition may become persistent and the discovery of the eruption should be followed by a careful examination for systemic disease The eruption begins with erythema the result of venous stasis the pattern depending upon the anatomical distribution of the vessels in the skin (vide p 6) In some cases a syphilitic or tuberculous eruption may take on a reticular pattern owing to antecedent livedo

REFERENCE—H G ADAMSON *British Journal of Dermatology* 1916 p 28?

Dermatitis hiemalis (Duhring) Duhring and Corlett have called attention to a form of recurrent winter eruption associated with high winds and cold weather in the Great Lake region of North America which is rarely if ever observed in this country The lesions are round or horseshoe shaped raised patches with well defined margins and of a dusky red colour At first the red raised patches are covered with small vesicles and closely simulate herpes The vesicles rupture leaving small denuded areas which weep Later the lesions fade and are then covered with fine scales In the late stage they somewhat resemble patches of lupus erythematosus but have no tendency to peripheral extension The backs of the hands and occasionally the feet are affected

Histologically there are vascular dilatation and œdema and the formation of epidermal vesicles Crusting may occur

Treatment Leather gloves are advised and the hands should be kept dry Diachylon ointment with three to ten grains of salicylic acid to the ounce is a suitable application

RADIATION AND THE SKIN

Heat rays light rays ultra violet rays Grenz rays X rays and the emanation and rays given off by radium and radioactive elements may all produce cutaneous changes They are all subject to certain common laws (1) The intensity of the irradiation varies inversely as the square of the distance of the source of the rays from the surface irradiated provided that the source is small compared with the distance and that the natural divergence of the rays is not modified by lenses or reflectors (2) Where the rays fall obliquely upon a surface the intensity is proportional to the cosine of the angle which the rays make with the normal to the irradiated surface with the exception of X rays for oblique rays which penetrate deeply have longer paths in the skin than the incident rays and therefore a higher percentage of the oblique rays is absorbed by the skin Only those rays which are absorbed can produce physical and subsequently chemical and biological effects The reflected or transmitted primary rays are without effect and this applies to all forms of radiation To these Freund has added the following —(3) The duration of the period of latency is in inverse proportion to the wave lengths of the active rays and the effect lasts longer in proportion as the wave length is shorter and (4) the greater the intensity of the irradiation the earlier the reaction and the longer it lasts For instance the long heat waves produce an almost immediate effect on the skin while the reaction to the ultra violet rays which are of shorter wave length does not appear for several hours after the exposure After exposure to the X rays in moderate dose there is no obvious effect for fourteen to twenty-one days while if the dose be excessive a reaction may appear in a week or ten days

DERMATOSES DUE TO HEAT

Heat, if sufficiently intense, produces inflammation of the skin. The various degrees of burn do not require long consideration in this work as they are fully dealt with in the text books of surgery. The simplest is an erythema, which may speedily pass off, with or without desquamation. The next degree is the elevation of the epidermis by serum to form bullæ or blisters. The most extensive lesions of the second degree are seen in scalds. In the third degree there is ulceration and lastly necrosis or sloughing of the skin.

The results of burns and scalds are temporary pigmentation in the superficial cases and permanent scars when the corium or the deeper structures are destroyed.

Keloid, the hypertrophic type of scar, is very prone to develop upon the scars of burns so that prophylactic X ray or radium therapy should be given to recent scars on exposed surfaces (*vide* Keloid, p. 696).

Treatment of burns. The erythematous lesions are treated with cooling lotions or creams.

Moist surfaces should be coagulated with tannic acid, *triple dye* or a penicillin powder, but only for short periods on the face, scalp, hands and about the joints lest atrophy or contractures develop. Cod liver oil 25 per cent in pasta hydrarg. ox. flav. is a suitable application, or dressings of tulle gras may be applied.

Occlusive elastic bandages are of value in the treatment of burns for by preventing lymph stasis they reduce the tendency to keloid formation.

Ulcerative and necrotic burns respond best to the "envelope" technique which affords constant irrigation with saline and hypochlorite.

It will be remembered that in the treatment of rheumatism dry heat of great intensity may be employed without producing a dermatitis. The same degree of heat in a moist atmosphere causes acute inflammation.

Erythema ab igne. Pigmentation due to Heat. Ephelis ab igne

In addition to the pigmentation left by a burn we frequently see a macular *pigmented eruption due to exposure to heat*. This is commonly on the front and inner aspects of the legs and occasionally on the forearms from the habit of toasting the limbs in front of the fire. The eruption begins as a coarsely reticulate erythema and ends in pigmentation. The brown macules scattered over the surface produce a characteristic mottled appearance. Sometimes a lichenisation and vesication occur. In Fig. 139 are shown the legs of a young woman with a marked degree of ephelis ab igne. Cooks and stokers suffer similarly. The continued application of a hot water bottle may also cause the eruption.

Microscopically there are changes of inflammatory type in the papillary and sub papillary layers especially around the vessels. Pigment deposits are found in the basal cells of the mucous layer of the epidermis.

THE EFFECTS OF LIGHT ON THE SKIN

The exposure of the skin to strong sunlight or to an artificial illuminant which is rich in actinic rays produces local and general effects

Local reactions to actinic light These reactions are (1) an acute erythema which may pass on to vesication and even superficial ulceration and (2) pigmentation

The intensity of the reaction varies with the intensity and duration of the radiation and with artificial illuminants inversely as the square of the distance of the source of light provided that the source is small and that



FIG 139 Erythema (Lichenis) ab igne Female aet ?

the natural divergence of rays is not affected by reflectors There is a wide range of reaction between different individuals to actinic light As a rule the reaction is more severe in blondes than in brunettes but pigmentation is more intense in darker subjects It would appear also that fluorescence of the skin which is more marked when the integument is oily from excessive secretion of sebum and oily sweat diminishes the sensibility

In the treatment of disease by light the sun s rays the electric arc with carbon poles mercury vapour tungsten and some compounds of tungsten are used The penetrative power of the highly actinic rays from tungsten is negligible and Finsen s work showed the necessity of blanching the skin to allow the rays of the violet end of the spectrum to pass through the skin It has been shown however that these radiations do not penetrate a normal skin for more than one millimetre

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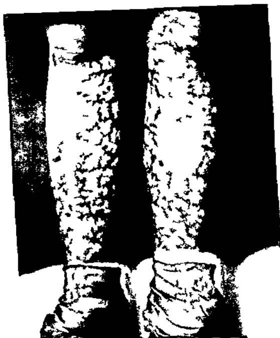


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Sensitisation of the skin to actinic light The local action of the actinic rays may be intensified

(*a*) By the application of certain fluorescent derivatives of coal tar *e g*, eosin, erythrosin to the skin Ulceration instead of vesication can be produced by exposing an area of skin to the concentrated rays of a large *carbon arc after the local injection of erythrosin*

(*b*) By the intravenous injection of 0 2 c c of hæmato porphyrin into himself, Mayer Betz so sensitised his skin that the exposure of part of his *right arm to the Finsen light caused sloughing*

(*c*) By the experimental production of hæmato porphyrinuria in animals by the administration of sulphonal Perutz found that a three minutes' exposure of the ear of a rabbit to Kromayer s mercury vapour lamp produced vesication followed by scarring No such reaction occurred in controls

(*d*) By the ingestion of buckwheat (*Fagopyrum esculentum*) pigs and sheep and rarely cattle and goats become so sensitised that exposure to sunlight produces on the white areas of these animals an eruption which varies from erythema to vesication ulceration and even gangrene The cutaneous manifestations are associated with pyrexia and other toxic symptoms Buckwheat contains phyto porphyrin which is closely related to hæmato porphyrin

(*e*) Dermatitis produced by numerous vegetable irritants may render a surface hyper sensitive It is suggested that such an affection be classed as phyto photo dermatitis " (*vide* p 343) Some of the recently introduced synthetic drugs appear also to be sensitisers, *e g*, *sulphonamides*

Solar Erythema Sunburn

Solar erythema is common It affects exposed parts and particularly the forehead cheeks and nose In oarsmen wearing rowing costume the neck and upper part of the chest and the arms may also be acutely inflamed An acute erysipelatous reaction of the feet and lower legs from paddling followed by exposure to the sun may present an alarming picture, and reckless sunbathing at the seaside or on cruises may cause serious ill health

The eruption occurs usually in the early summer before the skin has become bronzed by exposure to strong sunlight The area affected is bright red hot and swollen and there is often considerable *tenderness* and smarting The eruption starts some hours after exposure to the sun and fades in a few hours to a few days and is followed usually by *desquamation and later by pigmentation* *Fair people* suffer more than brunettes and albinos most of all Severe reactions are seen in negro albinos in the tropics Repeated reactions may end in cancer (*Fig* 141) Freund described an interesting case of a man who suffered from leucodermia on the face but who was otherwise dark After a long exposure to strong sunlight he developed an acute erythema solare on the white patches on his face while the normally dark pigmented parts were unaffected

As an illustration that sunburn is not caused by heat rays it may be mentioned that climbers on the glaciers suffer from sunburn on the

lower part of the face (chiefly on the chin and on the under surface of the nose) from light reflected from masses of ice and snow

A similar dermatitis occurs in workers in electric furnaces when the affection may be more severe passing on to the stage of blistering from subcorneous effusion of plasma

The treatment of solar eyrthema consists in the application of soothing lotions and creams such as the lotio calaminæ or the linimentum calaminæ or a cream containing ung sulphuris dr i ung zinci (1914) ad oz i Susceptible persons can avoid the acute effects by protecting the face with veils (red or brown) or by applying pigments in the form of powders or salves Tannic acid quinine or ichthyol in creams or lotions may be applied to protect the skin since they are to some extent opaque to actinic rays

Pigmentation from the Actinic Rays of Light Lentigo Ephelis, Freckle

Lentigines are yellowish brown to black pigment spots occurring on the face and elsewhere as the result of exposure to the actinic rays of light



FIG 140 Permanent freckles The hands were also affected

Pathology Freckles are circumscribed patches of pigment in the basal layers of the epidermis

Clinical features Freckles are rounded or irregular yellowish brown

to blackish spots, varying in size from a pin's head to a lentil seed much larger, occurring on the face neck, and the backs of the hands and wrists They may occasionally occur on the trunk and are usually multiple They are commonest in children and adolescents blondes and especially red haired subjects suffering most Ephelides appear during the summer and fade sometimes completely in the winter

Prognosis They may disappear under treatment but tend to recur

Treatment Some freckles may be removed by causing exfoliation of the epidermis *Pure carbolic acid or perchloride of mercury three or four grains to the ounce in glycerine or spirit applied two or three times a day* will remove them if continued until the parts become red when a little zinc ointment or cream should be applied It is wise to begin with a weak solution Red or brown veils may be worn as a protective by those specially liable to freckles

Occasionally **freckles are permanent** In the patient depicted here (Fig 140) they were in enormous numbers on the face neck and on the back of the hands and caused great disfigurement They were darker in the summer than in the winter but fresh spots occurred during the sunny months every year and it was asserted that none had ever disappeared The patient, otherwise in perfect health had been affected for several years There was no atrophy of the skin, and no telangiectases or warts appeared so that xeroderma pigmentosa was excluded Less severe cases are not uncommon

Pigmentary and Atrophic Dermatoses due to Light Chronic actinic dermatitis, Solar Epitheliomatosis

Xerodermia pigmentosa, *characterised by permanent freckling from* exposure to light with atrophy of the skin telangiectases pigmented warts and malignant tumours has been considered elsewhere (p 73)

Sequeira had under his care a man aged 35 years of age who worked in the fields and who since puberty had suffered from an increasing freckling with atrophy of the skin warty growths and epitheliomata He was in hospital several summers in succession for the removal of tumours which were characteristic epitheliomata The condition was identical with xeroderma pigmentosa but began later in life

Chronic actinic dermatitis *Tropical skin* Persons who have lived long in the tropics present a condition of the skin of the backs of the hands and on the face and neck characterised by atrophy and pigmentation with a degree of hyperkeratosis and the development of warty excrescences resembling those of xeroderma pigmentosa these keratoses are potentially malignant Paul found similar changes common in Australia and warned against excessive sun bathing The name 'cutis rhomboidalis nuchae' is given to the thickened creased skin at the nape

The *seaman s skin* described by Unna is possibly in part due to the influence of the actinic rays It is characterised by the formation of warty growths which become epitheliomatous The many cases seen in bargees suggest that tar and creosote in ropes and timber may be factors of etiological importance

The *senile skin* is atrophic and often pigmented and keratomata are

common In some cases the warty growths become malignant It is possible that this condition also may in part depend upon irritation by light (*vide* Fig 141)

Berlocke dermatitis Dermatitis pigmentaria is the term given to the pale or deep brown pigmentation of the skin produced by the action of sunshine and heat upon areas of skin sensitised by the application of eau de Cologne or other perfumes containing oil of bergamot An erythematous reaction may or may not precede the pigmentation

Chloasma bronzinum Tropical mask (Canthe) occurs in Europeans and also in natives in many tropical countries Part of the face or neck and chest is peculiarly pigmented The pigmented areas slowly increase and on the face produce an appearance like a bronze mask It is incurable while the patient remains in the tropics Sunlight appears to be the cause The mucous membranes are unaffected

Actinic urticaria Very occasionally a marked urticarial reaction results from the slightest exposure to light and Ingram remembers one young woman who had been subject to this most of her life She lived and worked away from the light by day and took all her exercise after sundown

Reference—*Journ Invest Dermat* 1946 vii No 1 93



Fig 141 Rapidly growing cancer following repeated sunburn in a negro albino

Summer Eruptions

There is a group of rather uncommon conditions which deserve attention in this place as being *in all probability* due to the irritant effects of light on peculiarly *sensitive skins* To this group the term summer eruptions is best *applied* for there are several degrees which have been described by *different* observers under several names The actinic rays *are the exciting* cause but *the reaction* appears to depend on sensitising bodies circulating in the blood (*vide* p 308) These *eruptions appear from February to October* but may relapse with bright sunny days during the winter especially *after* snowfalls

The least severe form is Actinic Dermatitis of which Hutchinson s summer prurigo is an example while *the more* acute forms have been called Recurrent summer eruption by *Hutchinson* Hydroa aestivale Hydroa vacciniforme (Bazin) and Hydroa *puerorum* (Unna)

Actinic dermatitis is not uncommon and *arises* in early or adult life It starts as a simple sensitisation *eczema* and develops later into an infiltrated lichenification and prurigo It may eventually persist throughout the year Histology shows an intense *round cell* infiltration in the corium not found in simple lichenification The condition may closely resemble lupus erythematosus to which *it is related*

***Hutchinson s* summer prurigo** (Lat *prurigo* itching) is a papulo

to blackish spots varying in size from a pin's head to a lentil seed rarely larger, occurring on the face, neck, and the backs of the hands and wrists They may occasionally occur on the trunk and are usually multiple They are commonest in children and adolescents, blondes and especially red haired subjects suffering most Ephelides appear during the summer and fade sometimes completely in the winter

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BULLOUS SULPHUR ERUPTION

Girl [illegible] d [illegible] ix Th[illegible] [illegible] and [illegible] recur [illegible] year in the summer month[illegible] Th[illegible] [illegible] many of which are seen in the ill[illegible]tration

[To face p. 31

vesicular eruption occurring in infancy and childhood and persisting to adult life *It is rare for it to commence after puberty*

The eruption appears in summer, and the patient may be free or nearly so, during the winter But there are some almost identical cases which depend on exposure to cold and wind

Both sexes are affected the earliest lesions appearing in infancy and recurrences occur summer by summer up to adult life

The face, neck and upper extremities are affected but occasionally the whole surface may be involved with the exception of the flexures and the palms and soles

The lesions consist of rounded papules of a pale red colour, sometimes as much as an eighth of an inch across Each papule may be capped by a tiny vesicle In rare cases pustulation occurs The lesions itch at night and the tops may be scratched off by the patient, causing small blood crusts to form In some cases urticarial wheals occur The lesions are always discrete

Summer prurigo has to be diagnosed from other itching papular eruptions and from the more severe conditions to be immediately described *The history of the first appearance in early childhood and* the periodical recurrences in the summer are usually sufficient to make a diagnosis from other pruriginous eruptions

Hydroa æstivale (Gk *hudor*, water Lat *æstivus* summer) Recurrent summer eruption (Hutchinson) Hydroa vacciniforme (Bazin) Hydroa puerorum (Unna)

A recurrent summer eruption of children characterised by vesication *which leaves scars*

Etiology Sex has no influence although most of the early cases described occurred in boys hence the name Hydroa puerorum The disease as a rule, begins in childhood and is occasionally found in more than one member of a family Sunlight is the exciting cause and in a number of cases the eruption is associated with hæmato porphyrinuria

Clinical features During the first two or three years of life rarely *later an eruption appears on exposed parts in the summer* It is often preceded by a sensation of heat and pain and some general malaise Itching is uncommon The elementary lesions are red spots, on which develop one or more small vesicles The vesicles usually coalesce to form small flat blebs which dry up in three or four days into scabs or crusts In other cases umbilicated vacciniform lesions develop which gradually dry up with the formation of scabs To this type Bazin gave the name of Hydroa vacciniforme In all cases the separation of the scab leaves a depressed red spot which ultimately forms a white depressed scar (Plate 35) An attack lasts for two or three weeks the vesicles coming out in crops

The cheeks nose ears neck and the backs of the *hands are the* parts most commonly affected but in some rare cases the eruption may be more widely spread The attacks recur yearly in the summer or early autumn but as puberty is approached they become less acute and cease when adult life is reached A pink staining of the milk teeth due to blood pigment and deep pigmentation of bone as shown by radiographs were observed in a congenital case described by Mackey and Garrod

Diagnosis Hydroa æstivale has to be distinguished from other scar leaving eruptions particularly the tuberculides lupus erythematosus and syphilis The symmetry of the eruption its distribution on parts exposed to light and above all the history of its recurrence every summer from early infancy should make the diagnosis easy

Prognosis With adequate care and protection much relief can be obtained

Treatment of summer eruptions The patient should be protected from light by wearing broad brimmed hats high necked frocks long sleeves gloves etc and protective cosmetic applications

Local sepsis about the nose and throat and gastro intestinal abnormalities should be considered as possible sensitising factors Locally tannic acid 2 to 10 per cent or quinine hydrochlor 2 to 4 per cent or ichthyol 2 to 4 per cent in calamine lotion or in pellanthum (a non greasy calamine cream) or in a cold cream base are helpful or the patient may use a mechanical protection as Cover Mark These must of course be applied before the patient leaves his or her bedroom each day Fluorescin 0 5 per cent in olive oil is useful in the tropics Yellow vaselin is effective

Fractional doses of X rays relieve irritation and clear or control the eruption each season until the phase of sensitiveness passes Intravenous or intramuscular injections of gold in small doses sometimes cure the condition temporarily or permanently Arsenic quinine and belladonna have been advocated but are of doubtful value

EFFECTS OF RÖNTGEN OR X RAYS ON THE SKIN

The discovery by Rontgen of Wurzburg of the special properties of the rays given off by a Crookes tube led to their being widely used for diagnostic purposes It was early noticed that the radiations caused a falling of the hair and Freund and Schiff were led to apply them for the treatment of an extensive hairy mole The changes which they found were produced in the skin led to a still further advance The rays began to be used for therapeutic purposes and they now play an important part in the treatment of cutaneous disease At first the application of the rays was purely empirical frequent sittings of short duration being given until some obvious change was noticed in the integument Later Holtzknecht and Kienbock in Vienna and Sabouraud and Noiré in Paris and numerous other workers developed methods of measuring with some degree of accuracy the quantity of rays given off by the X ray tube The rays are of varying quality according to their wave lengths and a whole spectrum of radiations of different therapeutic value is produced We are able to eliminate the softer rays by appropriate filters and this procedure is of great value in the treatment of the deeper lesions (p 761)

The X rays produce profound modifications in the structure of the skin and muscle but the effects are most marked upon the cells of diseased tissue for instance the cells of a rodent ulcer and some granulomata undergo profound alteration before the normal cells of the epidermis are affected But in larger doses the rays will cause the destruction of the normal elements of the skin and even of the subcutaneous tissue The quality and especially the penetrating power of the rays vary considerably

PLATE 36



X-RAY DERMATITIS

SCARRING AND PIGMENTATION CAUSED BY PROLONGED X-RAY TREATMENT

The skin is atrophic and pigmented, and there are numerous telangiectases. The latter extend far beyond the pigmented area. The rays were applied for tuberculous glands. There was a small patch of lupus erythematosus on the nose.

[To face p. 313

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with the wave length the shorter the wave length, the harder or the more penetrating are the rays

Small doses of X rays usually *produce no visible effects* upon the skin although exceptionally an early transitory erythema has been noted, and in dark subjects pigmentation may increase in the treated areas It is now established that no harmful effects ensue from sub erythema doses, even when repeated according to the usual practice Such doses undoubtedly *influence* physiological and pathological processes although how they do so is not clear Their psychological value in chronic disease has probably been under rated

The epilation dose is usually taken as 4/5ths of the erythema dose (350 to 450 r at 75 to 90 K V) and in the case of the scalp erythema rarely develops although it is now known that some areas of overlap receive as much as 70 per cent more than the planned dose to each area

The dose was *formerly estimated by the pastille of Sabouraud* and Noiré, a small disc covered with an emulsion of platino cyanide of barium in collodion acetate of starch The pastille was placed midway between the anti cathode of the tube and the area irradiated When a dose of X rays sufficient to turn the pastille from a pale green to a sepia colour (tint B) was administered (350 to 450 r) the hair follicles were affected and at the end of a fortnight to three weeks the hair fell At the end of six weeks to two months the bald area began to be covered with a fine down, which a few weeks later took on its normal character (see Appendix Physiotherapy in Dermatology p 755)

Many dermatologists have now abandoned the pastille and adopted a type of dosimeter—as the Hammer dosimeter—whereby the dosage is measured in r units by the radiation passing through an ionisation chamber placed upon the skin which is being treated and within the field of radiation This is a more accurate method of measuring dosage and the erythema dose with the Hammer dosimeter is approximately 450 r units Fractional doses are calculated accordingly but it may be taken that the equivalents of the old 1 B pastille dose is 200 r $\frac{1}{3}$ B 150 r and $\frac{1}{4}$ B 100 r approximately Goldsmith has shown that there is considerable variation in the dose necessary to produce an erythema in different individuals—ranging from 350 to 470 r

If the erythema dose is exceeded the skin becomes red at the end of a *fortnight*, perhaps a little earlier epilation occurs and there is a possibility that the hair will not grow again

X-ray burn This reaction constitutes the first degree of an X ray burn and while being a warning of danger nothing more serious than some desquamation and temporary pigmentation may result In the second *degree of reaction to a larger dose of X rays* the erythema appears earlier is more intense and the skin is hot and œdematous Vesication may develop by the tenth day the hair follicles sweat and sebaceous glands are destroyed or permanently inhibited so that although the skin heals in two to three months some late results are inevitable In the third degree the reaction is earlier still The epidermis is destroyed and ulceration may be present by the tenth day

The Röntgen ulcer is very painful indolent and covered with a yellowish adherent slough like a diphtheritic membrane It may take many weeks

to heal. When very large doses have been given deep necrosis occurs and the ulcer produced may never heal except after excision and skin graft. This reaction constitutes the fourth degree of severity of an X ray burn.

It is obvious from the observations already made that frequently repeated doses have a cumulative effect and repeated exposure without measurement caused some of the troublesome early results. When doses of 900 r (1 B) or more are administered an interval of at least *three weeks* should elapse between one application and the next and a course of treatment for benign lesions should rarely exceed three sittings and there should be an interval of *at least three months* between the courses.

An important late result of X ray dermatitis is the formation of telangiectases in the scar. These may not appear for several weeks to some months or years after the exposure to the rays and without any dermatitis if repeated exposures have been made. They may occur after an erythema but are most common after superficial ulceration. In addition to the telangiectases the X ray scar is pigmented and atrophic. Plate 36 illustrates the pigmentation, atrophy and telangiectases left after dermatitis induced by many exposures for the reduction of tuberculous glands. Similar telangiectases occur after prolonged application of radium without filtration and occasionally are seen after treatment with the mercury vapour lamp of Kromayer.

X ray dermatitis or necrosis may recur after a long interval. Darier described a case in which twenty exposures were made twelve years before for a supposed mammary cancer. The superficial dermatitis which followed healed. Eleven years and a half later the patient had an extremely obstinate ulcerative dermatitis. Sections showed excessive cornification, degeneration of the epidermis and papillæ and fibrosis of the papillary layer with marked dilatations of the vessels in the corium. We have seen epithelioma develop as the result of an acute X ray burn as well as after chronic Röntgen dermatitis.

When it is necessary to apply the X rays in the treatment of deep seated tumours, enlarged glands or hypertrophy of the spleen the epidermis is protected from the soft rays by thin sheets of aluminium from 1 to 4 millimetres thick. Silver and copper filters are also used.

Treatment of acute X ray burns. In the erythematous stage nothing more is required than a soothing application such as ung. zinc oxid, hazeline ointment or liniment of calamine or ol. morrhuæ 25 per cent in zinc paste. Provided ulceration be not too deep cicatrisation usually occurs though perhaps only after several months treatment. Such an ulcer is prone to break down even after complete healing and there are often subjective symptoms in it for months and even years, the patient complaining of itching, tingling and other forms of irritation. Often there is intense pain at first with neuralgic twinges which may radiate from the ulcer. Where there is deep sloughing and the locality of the ulcer permits excision with grafting may be practised with advantage.

Frequent repetition of small doses of the X rays produces a condition which may pass on to epithelioma; such a disastrous result has followed the prolonged treatment of some forms of lupus by the rays. Sequeira saw a patient who had had 1 000 sittings under the rays for lupus vulgaris. Here an epithelioma developed upon the cicatrix produced by the treat

with the wave length the shorter the wave length the harder or the more penetrating are the rays

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appears to favour radio necrosis All forms of soothing applications have been tried Bland ointments containing cod liver oil are usually well tolerated

Surgical interference should be avoided as long as possible We have seen several cases in which the removal of an affected nail appeared to start an acute destructive process Even the removal of a slough appears to be harmful With rest and time many of the worst cases tend to heal with atrophy and that is the best that can be hoped for The keratomata are

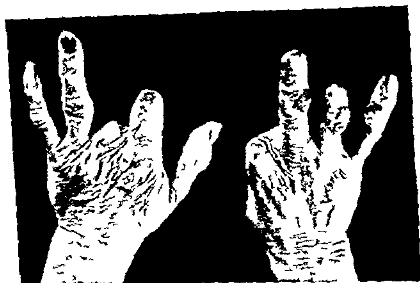


Fig 14? X ray dermatitis of the operator The hands of a pioneer worker

best treated by radium but should epithelioma develop excision or diathermy is necessary

REFERENCES—W N GOLDSMITH Recent Advances in Dermatology S C SHANKS *Brit Journ Derm and Syph* 1938 50 440 L H MOLESWORTH and H L BROSE *ibid* 1938 50 43

The effects of Grenz rays on the skin (Bucky rays) These rays are very soft compared with X rays since they are produced by a high tension of about 10 000 volts and they can only escape from the X ray tube when a special window of lithium borate glass is provided So their penetration of the skin is very limited and it is estimated that the hair papillæ receive only about 1 per cent of the surface intensity As with other forms of radiation erythema is the first visible reaction and after small doses may not appear for several days but with larger doses (2 000 r or more) an erythema may occur within twenty four hours Some increase in pigmentation may occur without erythema with very small doses and is usually marked after an erythema has subsided Very large doses (4 000 r or more) may produce an œdematous reaction with vesicles

ment In another case the patient had had 300 applications of the rays and here again cancer developed Norman Walker and others have reported similar cases A patient who had been under X rays for rodent ulcer several times a week for *twelve* years developed an incurable Rontgen ulcer and epithelioma followed

X-ray dermatitis of the operator The early workers with the X rays were ignorant of the dangers which attend their use It was a common practice to hold the hand in front of the X ray tube to determine by a fluorescent screen the penetrative power of the rays emitted In screen examinations too, the backs of the fingers of the operator were usually exposed to the rays The result of these repeated exposures for short periods was an intractable X ray dermatitis with exceedingly tender and painful chronic ulceration, followed by atrophic scarring and telangiectases The ulcers were usually irregular tracts along the backs of the fingers, the base being covered with a yellowish white adherent slough The margins of the ulcer were slightly tumid and bright red and there might be swelling and redness of the whole finger or even the back of the hand The nails always suffered, in the slighter degrees an excessive brittleness was first noticed later painful onychia occurred with destruction and separation of the nail In some cases the phalanges had undergone partial absorption, and the atrophy of the skin and subcutaneous tissue lead to grave deformity Unfortunately, this chronic and painful affection was not the only or the most serious part of the trouble for warty nodules appeared on the affected skin and eventually became epitheliomatous necessitating amputation of fingers or parts of the limbs In a few instances the face had been affected and we have seen multiple carcinomata on the trunk Many of the pioneer X ray workers died from malignant disease

With the use of protective shields and the recognition of the dangers the risks have been eliminated and no X ray worker should now be liable to this terrible affection He should control treatment from outside a lead lined cubicle with lead glass window

There is still the risk of general debility and of sterilisation from scattered secondary radiations coming off the patient if operators are not careful and the wide use of X rays in medicine and in industry to day makes this warning very necessary

The recommendations of the National Physical Laboratory that all X ray operators should have regular periodic medical overhaul and blood examinations that they should work only thirty two hours a week and have four weeks holiday each year should be strictly observed

Pigmented spots appear on the hands forearms and elsewhere in X ray workers A spot of black pigment the size of a threepenny piece developed with remarkable rapidity on the palm of an assistant at the London Hospital For fear of malignancy it was immediately excised

The lesions of chronic X ray dermatitis are always worse in the cold weather and even when quite soundly healed they tend to break down into ulcers in the winter

Treatment The sufferer should of course be removed from work in which he is exposed to the rays and the affected limb should be kept at rest in a sling In our experience fomentation should be avoided as it

CHAPTER XVII

DERMATOSES DUE TO CHEMICAL IRRITANTS

Occupational Diseases of the Skin—Contact Dermatitis from Plants and Drugs

In practice by far the most frequent cause of inflammation of the skin due to chemicals is found in the processes of industry Gardiner was able to trace at least 66 per cent of all cases of dermatitis to this cause and our own experience shows that this figure does not exaggerate its



Fig 143 Fur-dye dermatitis

importance This subject is of such magnitude as to demand special attention and is dealt with in a subsequent section (pp 323 and 347)

It is however important to remember that apart from manufacturing processes chemical irritants cause dermatitis under conditions which may be easily overlooked It will therefore be useful to review some of the more common forms met with in hospital and private practice

(1) **Dyes** The use of aniline and other dyes for clothing is a common cause of dermatitis (*Dyed Fur Dermatitis*) Para phenylenediamine is

or bullæ but the dermis escapes and complete healing occurs, although slight atrophy and some telangiectasis may develop some years later

The Effects of Radiations from Radioactive Substances

Alpha rays are not rays in the ordinary sense of the word, but are particulate consisting of the nucleus of helium carrying positive electrical charges These minute projectiles are shot from atomic orbits of radium radon, and thorium X with velocities up to 10 000 miles a second They are readily absorbed by thin paper so that they do not emerge from the ordinary radium appliances used in medicine They can of course affect tissues when derived from radon in solution or wax, but here the beta particles are of more importance and alpha ray therapy is practically confined to techniques with thorium X If a solution of thorium X containing 1–2,000 electrostatic units per cubic centimetre is painted upon the skin an erythema appears within a few days, and with the stronger solution within twenty four hours Vesication is a very rare phenomenon and usually a slight desquamation and various degrees of pigmentation are the only sequelæ of the erythema and thus thorium X is a safe method of radiotherapy, but its usefulness is limited to very superficial lesions of the skin (p 769)

Beta rays are somewhat analogous to alpha rays in being minute projectiles consisting of electrons moving at velocities sometimes approaching that of light or X rays The electrons produced in X ray tubes do not approach these high velocities and are unable to emerge from the apparatus so that in therapy beta rays are derived from radium plates which are thinly screened or from radon in glass tubes or in solution or wax It is these rays that are used in the treatment of superficial malignant lesions with radium plates and it is obvious therefore, that they have a much greater power of penetration than the alpha particles Small doses are followed by an erythema and subsequent mild pigmentation Larger doses may produce vesication or ulceration totally destroying the epidermis and resulting in slow healing painful superficial ulcers and atrophic scars which are very prone to the development of telangiectases later We have found it very difficult to influence port wine marks with beta ray therapy without producing obvious atrophy and the method is not recommended (p 767)

The **gamma rays** of radium are essentially of the same nature as X rays but have much shorter wave lengths and therefore have a greater power of penetration The results of burns with large doses of gamma rays are identical with those produced by corresponding doses of X rays and the sequelæ are also identical (pp 314 and 765)

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probably the most irritant of these This substance (and derivatives of the same) has been largely used *in dyeing coney skins to imitate beaver and* mole fur for the collars and cuffs of winter coats Women are the most frequent sufferers, the irritant causing an acute dermatitis, with erythema œdema vesication and crusting involving the neck and lower part of the face Furriers and tailors engaged in making up these garments are affected on the hands Idiosyncrasy to the irritant is undoubtedly an important factor but many cases have been seen of recent years (Fig 143)



Fig 144 Hair dye dermatitis

and H E Cox presented his experience in the chemical examination of furs *in relation to dermatitis in The Analyst* of December 1933

Hair dyes, made from para phenylenediamine and related chemicals are also the cause of an acute dermatitis of the scalp face and neck, often attended with considerable œdema vesication and crusting *Here again* certain individuals are predisposed to the irritant Ingram patch tested 1,000 persons not previously exposed to a 1 per cent *solution* of para and meta phenylenediamine and found approximately 4 per cent susceptible Some persons become sensitive after frequent usage, while in others immunity persists for years

Face powders containing orris root are sometimes irritant For this reason *orris root* has largely been abandoned but *occasional* cases of face

powder dermatitis are seen usually from the perfumes added Other cosmetics as lipstick eye shadow eyelash varnish nail polishes cuticle solvents etc provoke dermatitis Often the cause is obvious to the patient and medical advice is not sought but difficulty may arise if the cheek chin or upper eyelids be affected by contact with varnished finger nails Lipstick dermatitis is commonly due to the eosin erythrosin rhodamin or tolu safranin employed all of which are believed to increase



FIG 14 Dermatitis (contact) Fabric dye

photo sensitivity Deodorants astringents and depilatories employed generally about the axillæ or face may be a source of trouble

REFERENCES—CARLETON ALICE Cosmetics *Brit Med Jour* 1933 1 999 A SEZARY Cheil te du rouge *Bulletin de la Soc franç de Derm et de Syph* 1935 493 The New York Board of Health put a ban on the manufacture sale and use in beauty parlours of dyes known to cause harmful results

Fabric dyes in frocks khaki shirts socks stockings and clothing occasionally give rise to dermatitis in those showing an idiosyncrasy Many dyes employed are more fat soluble than was previously the case and this may account for the increased incidence of such troubles

Various dressings in new clothing and substances used to prevent

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idiosyncrasy or acquired hypersensitivity Idiosyncrasy may account for eruptions arising from practically any external cause and the most unlikely possibilities should not be dismissed without patch test investigation

The patch test is a standard investigation of the greatest value and should never be neglected especially in industrial or medico legal cases A small portion of the suspected agent is applied to the unaffected skin (generally the upper arm) It should be moistened covered with cellophane or lint and should be fixed in position by strapping (as elastoplast) and left for twenty four hours If in solution a small portion of lint 1 inch square may be saturated and applied in similar fashion At the same time a control test with a piece of moistened lint—or any other chosen control—is applied If the suspected agent is the cause of the trouble it will naturally provoke a reaction at the site of application of the same size and shape as the test and this is recorded as a positive reaction The site should be examined again at twenty four forty eight and seventy

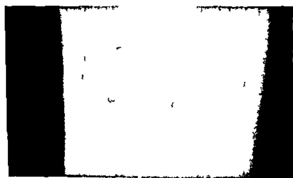


Fig 147 Positive Patch test reaction.

two hour intervals Such reaction may spread locally may excite the original trouble afresh or may possibly give rise to eruptions elsewhere but in our experience this rarely occurs and then only with a few particular chemical irritants This argument is occasionally employed in law courts to justify a refusal to be investigated but in our opinion it should not be upheld The common sense and discretion of the investigator are called for in such cases the application can for instance be made for a very short period of time and can be constantly watched for discomfort or reaction

Occasionally a reaction is delayed but not if the patient has recently suffered from dermatitis Tests should not be made while a patient is suffering from an acute attack of dermatitis or the mere application of an occlusive dressing may give rise to a reaction of the eczematous pattern

Occupational Diseases of the Skin

Professional and trade dermatitis It is difficult to classify the affections of the skin caused by occupations because in modern conditions the processes of manufacture are highly complicated Occupational diseases of the skin may be in the nature of traumatic dermatitis from gross chemical

creasing of garments may give rise to dermatitis, and D D T in service dress accounted for some cases

Suspenders sometimes provoke dermatitis from sensitiveness to nickel or rubber Necklaces, bracelets wristbands watches earrings and similar adornments may likewise cause trouble We have seen cases of dermatitis from dress protectors and rubber belts spectacles, hatbands gloves, boots etc and even from the celluloid of motor car steering wheels

Boots The dyeing of cheap brown boots with aurantia was at one time a common cause of dermatitis and in some countries its use is prohibited by law

Hatbands made of imitation leather or dyed with chrome and aniline



Fig 146 Suspender dermatitis (Patch test)

dyes have also been shown to cause inflammation of the skin of the forehead, but dermatitis from this cause is very rare

(2) **Photographic chemicals** must not be forgotten as a cause of dermatitis in the amateur (*vide* p 335) We have seen several cases from metol and other reagents in persons who develop their own films

(3) **Match-box dermatitis,** due to the addition of the sesquisulphide to ordinary amorphous phosphorus, was rather common in certain countries during the 1914 18 War The dermatitis occurred on the upper part of the thigh from contact with match boxes carried in the trousers pocket

(4) **Plant dermatitis** in the amateur gardener may be overlooked The special features are described on p 339

(5) **Lac dermatitis** from contact with *Mah jongg* sets has been reported on several occasions The irritant is a non volatile body derived from *Rhus vernicifera* (*vide* p 342)

(6) **Vulcanite dermatitis** occurs in the ears in some telephone operators and occasionally from headphones used in " listening in "

These are examples of *contact dermatitis* arising either through

vesicles may or may not rupture but their rupture is followed by oozing of plasma producing a condition which may be called eczematous. Such an eruption may spread beyond the area irritated. In some varieties the vesication is of the **pompholyx type**. The vesicles are tense and very closely set and often coalesce to form large blebs. In many cases the raw surfaces produced by the irritant dermatitis become infected with pyogenic organisms and the area becomes impetiginised (*vide* p. 444).

The inflammation in most subjects tends to subside on the removal of



FIG 148 Erythemato vesicular dermatitis (soda water)

the source of irritation the weeping areas dry up some scaling appears and ultimately the tissues are restored to their normal condition. The **nails** often suffer in trade dermatitis and the staining produced by dyes etc often gives useful assistance in diagnosis. They are often very brittle or separate from the matrix and sometimes show fissures and pits.

Hyperkeratosis and fissures. In other conditions the epidermis becomes thickened and horny as a result of the chronic irritation and the thickened horny layer cracks producing fissures which are exceedingly painful.

Folliculitis often of a suppurative acneiform type is produced by the mineral oils (Fig 157). Irritating dusts tar pitch bakelite resins and chlorine compounds give rise to dry acneiform eruptions.

Ulceration is produced by some irritants e g chrome lime and arsenic. In some instances not only is the skin affected but also the nasal septum where perforation may result from the local irritation of the chemical in powder form.

or other irritants, or in the nature of eczematous dermatitis resulting either from wear and tear of the skin from long continued exposure to minor injury or from allergic sensitiveness (contact dermatitis) to one or more external agents with which the workman comes into contact

Certain specific ulcerative atrophic and cancerous changes result from particular occupations especially those involving contact with chrome lime tar and X radiations In investigating a suspected case it is of the utmost importance to find out exactly what the employee does For instance, he may say that he works in a particular trade, but on close inquiry it is found that his duty is to use alkalies or turpentine to clean utensils used by the regular workers He may be employed in a steam bakery, looking after machinery as an engineer and so come in contact with dirty mineral oil If one were not careful in learning exactly what kind of work this man performed he would be classed wrongly and preventive measures would not be taken

Occupational diseases of the skin may be due to —

(1) Direct chemical irritants such as the chrome compounds arsenic, coal tar derivatives aniline dyes phosphorus, strong acids and alkalies

(2) Processes which mechanically injure the continuity of the skin such as brushing, scratching and rubbing *e g* friction from dust sand pumice silicates

(3) Substances which soften and macerate the integument, such as water alkalies, soap soda, lime ammonia

(4) Substances which dissolve and remove the natural grease of the skin *e g* turpentine petroleum, petrol and benzine and its homologues and their nitro and amido derivatives

(5) Oils, particularly the heavy oils used for lubrication mineral oil linseed oil, etc Thinners, white spirit, dyes paints cellulose paints, polishes, etc

(6) Certain plants by irritants in their hairs glucosides and other bodies in their juices and certain woods chiefly in the form of irritating sawdust as teak

(7) Infections encountered in the course of work from vegetable parasites animal ringworms anthrax, tubercle bacteria and animal parasites *in grain itch copra itch etc*

(8) Exposure to X rays and radio active substances

Clinical features —

Site As a rule the parts affected are the hands, particularly the dorsal surface the flexure of the wrists and the undersurfaces of the forearms and from them the eruption often extends The face and neck are sometimes affected secondarily and occasionally primarily from contact with dust and powders in the air and from containers carried on the shoulders When the patient works with gases or fine powders or with irritant fluids the covered parts may be attacked and the eruption is then most marked in the flexures particularly the groins and axillæ and the genital region

Types of eruption —

Traumatic dermatitis arises from contact with gross irritants and takes the form of an erythema with blistering or ulceration in severe cases

Eczematous Erythemato vesicular type The commonest type of dermatitis is erythema which frequently passes on to vesication The

severe ulceration Weak solutions of the corrosive acids produce an eczematous eruption They are used in various manufacturing processes (Fig 140) and also for household cleaning e g hydrochloric acid spirits of salt

Alkalies Strong solutions of caustic potash and caustic soda stain the skin a reddish or brown colour and the burn which result from them are often severe The nails become dull and cracked and jagged and separate from the nail bed Milder degrees of dermatitis are caused by soda used in household cleansing paint cleaning etc Sugar soap a crude form of soda is frequently used by painters (see also Lime)

Antiseptics Surgeons and nurses are frequently sufferers from eczematous dermatitis caused by carbolic acid lysol and other antiseptics The frequent washing and scrubbing of the hands tend to increase the



FIG 1 0 Dermatitis from antiseptics Lavatory attendant

irritant effect of the chemicals In some cases the eruption resembles pompholyx the vesicles forming along the sides of the fingers The irritant action of the antiseptics may be alleviated by the use of astringent hand lotions such as equal parts of red lotion and glycerine applied after washing at the end of an operation Patch test investigation is important here for it may be found that a single particular antiseptic or soap or polish used in wards is responsible for a contact dermatitis and avoidance of this may enable the individual to keep clear of skin trouble

Arsenic causes an eczematous eruption and ulceration Tanners and the makers of arsenical pigments and sheep dip are the most frequent sufferers In some forms of arsenical pigment and weed killer the substance is a fine powder which attacks not only the exposed parts but also those which are covered In many cases in addition to the cutaneous affection there is perforation of the cartilaginous septum of the nose Keratosis on exposed parts leading to cancer is met with in the workers in arsenic mines and in the makers of sheep dip

Cancer must be included as a result of irritants used in trades The commonest is tar cancer, caused by crude tar and its derivatives paraffin soot, arsenic and mineral oils The tumours occur usually on the hands and face and the scrotum

Workmen's Compensation Among the industrial diseases which are contained in the Schedule of 1906, and its more recent extensions, are



FIG 149 Hydrochloric acid dermatitis in a galvaniser

anthrax dermatitis produced by dust or liquids ulceration and cancer produced by tar and its derivatives mineral oils and paraffin sweeps cancer, mule spinners cancer chrome ulceration and the effects of X rays and radioactive substances The Workmen s Compensation Acts ensure that provision should be made for permanent or temporary disablement due to any of the conditions mentioned

The following in alphabetical order are some of the common causes of occupational skin diseases

Acids, especially when undiluted cause circumscribed burns of the skin Nitric acid stains the skin yellow sulphuric acid a dirty brown or red colour and carbolic acid a greyish white Hydrofluoric acid causes

REFERENCE —S A HENRY Cancer of the Scrotum in Relation to Occupation 1946 *Oxford Univ Press*

Sulphide of arsenic produces a chronic ulcer called "pigeonneau" by French authors

"**Asbestos corns,**" from splinters of crude asbestos penetrating the skin, afflict asbestos workers

Asphalte causes eruptions similar to those produced by tar (*vide infra*)

Bakelite and the "plastics," elaborated on a formalin urea basis provoke dermatitis in susceptible persons

Bakers Dermatitis amongst bakers (Fig 151) may be due to Chinese or other flours or the bleaching process involving the use of chemicals (*e g*



Fig 151 Bakers dermatitis secondary sepsis

persulphate) Yeast has also been blamed There is no reliable evidence that animal parasites are the cause Acquired allergy would explain some cases and in others sugar and other ingredients have undoubtedly com



Fig 152 Water maceration (crockery washing at restaurant)

plicated the issue The dermatitis is localised as a rule to the hands and inner sides of the forearms and in rare instances has been widely spread Itching is followed by vesication or pustulation The condition responds usually to soothing treatment if the parts are protected from contact with dough Relapses often occur on the return of the worker to his employment Patch test investigation may be helpful but many cases appear to depend mainly upon the traumatic effect of the dough sticking to the skin and rough methods of removing it

Barbers suffer from eczematous dermatitis from the constant wetting of the hands and also from the use of shampoo lotions containing spirit

ammonia and other chemicals and from dyes Cases of ringworm contracted in this occupation have also been seen

Minute fragments of hair penetrate the skin of the fingers and finger clefts and about the nails of barbers and may provoke a traumatic dermatitis or give rise to septic infection and small granulomata

Barmaids and servants employed in **restaurants**, whose hands are constantly wet from beer and washing glass china etc are often sufferers from dermatitis and paronychia The trouble is more common in winter and depends largely upon insufficient drying of the hands (Fig 152) Monilial intertrigo and perionychial infections are also seen

Bichromates are the cause of many cases of dermatitis the eruption



FIG 153 Bichromate dermatitis in a French polisher

varying from vesication to actual ulceration chrome ulcers The bichromates are largely used in dyeing furniture polishing stick dressing etc The nails are stained brown (Fig 153) Legge points out that chrome irritation even of many years duration does not cause cancer

Bleachers and cleaners using *chloride of lime* and vitriol suffer from a dermatitis of the hands more marked upon the palmar surfaces Relapses are common

Boots and shoes may provoke a chrome or dye or rubber dermatitis

Butchers and others who handle the dead carcases of animals are sometimes infected with tubercle (*vide* p 475) An acute form of malignant pemphigus (p 644) and erysipeloid (p 450) may also occur

Carbide of calcium acts as an irritant and may cause dermatitis

Chemists are also liable to contact dermatitis In some cases there is remarkable susceptibility to certain substances The extraction of *alkaloids is a frequent cause of dermatitis* Morphine, codeine heroin and strychnine are the common irritants Cranston Low has shown by experiment that the acids used in the manufacture are not the cause Occasionally crude opium acts exactly like morphine

Chimney sweeps suffer *in the first instance from an eczematous* dermatitis which is followed by thickening of the skin and the production of warty tumours which may become malignant The scrotum is the part most commonly affected

Chlorine workers suffer from a follicular eruption which resembles acne



Fig 154 Chrome holes (ulcers)

Coal dust at sites of friction and pressure and water in coal mines may irritate the skin

Cocaine and novocain may cause dermatitis (*vide* Dentists *infra*)

Coopers are affected by the caustic soda used to clean barrels The eruption is of the common irritant type

Copra itch, which is caused by an animal parasite is discussed on p 178

Coral cut is the name given to septic sores *occurring on the legs* of seamen wading ashore on coral islands Cleland believes that there is an infection derived from the coral

Dentists may suffer from cocaine and novocain dermatitis The index and *adjacent finger ends* and nails are affected

Dyes and substances used in their manufacture are common causes of dermatitis (Fig 155) The *aniline* dyes usually betray the cause of the eruption by the staining of the nails We have seen several cases in which

the irritant was *Bismarck Brown* *Aurantia* hexanitro diphenyl amine a dye used in the staining of the cheaper kinds of brown boots and shoes causes a vesicular eruption (*vide* p 322)

Di nitro chlor benzole produces an acute œdematous erythemato papular itching dermatitis with sometimes a distinct yellow tinge on any parts touched by the crystals It is used in the manufacture of certain dyes

Explosives The manufacture of high explosives on the enormous scale demanded by modern warfare introduced a number of cutaneous affections which in some instances are associated with grave constitutional symptoms Benzine and its homologues have a toxic action on the human subject and the nitro bodies used as high explosives are the more toxic in



Fig 1 Dermatitis in a fur dyer

proportion to the number of nitro groups they contain Toluene comes first then Mono nitro toluene and lastly Tri nitro toluene The poisons used as explosives or in their manufacture that are a real danger are —

(1) Tri nitro toluene
(2) Tetryl
(3) Picric Acid
(4) Fulminate of Mercury
(5) Barium Salts
(6) Di nitro phenol
(7) Hexa nitro diphenylamine
(8) Mixed Acids

(1) *Tri nitro toluene* (T N T) Amatol and Ammonal combinations which owe their toxic effects to T N T The skin and hair are stained yellow The eruptions produced are erythema œdema and vesication and

rarely small ulcers, 'powder holes' In some cases the vesicles on the hands and fingers resemble cheiro pompholyx The sensory symptoms are itching and burning Secondary infection may lead to septic conditions of the affected skin, sometimes with thrombosis and phlebitis Exfoliation of the affected areas is common Moist greasy conditions of the skin favour the development of the dermatitis hence more cases occur in the warmer seasons of the year The eruption may persist for several weeks after the patient has been withdrawn from the work and septic cases may last months Purpura is a rare phenomenon but of great clinical import as it signifies that there are grave blood changes—aplastic anæmia which may be rapidly fatal Gastro intestinal symptoms and jaundice and acute yellow atrophy of the liver may occur and certain individuals show a special susceptibility in this respect Reactions to these chemicals are both idiosyncratic and toxic

(2) *Tetryl* (Tetra nitro methylaniline or more correctly, Tri nitro phenyl methyl nitramine) The skin and hair are stained yellow The eruption is usually a diffuse erythema, often associated with gross œdema Papulation and pustulation also occur The eruption is commonly worse on the face and neck, the conjunctivæ being often involved The hands and arms are not frequently affected A transient asthmatic seizure and epistaxis may occur Nausea and vomiting accompanied by epigastric pain are reported Idiosyncrasy is common and the incidence of dermatitis high Sequeira has seen an acute attack in a susceptible subject from travelling in a railway carriage with a worker

(3) *Picric acid* (melinite or lyddite) is tri nitro phenol The skin and hair are stained yellow Occasionally a simple erythema develops on the hands and forearms

(4) *Fulminate of mercury* used to fill detonators does not cause mercurialisation Dermatitis of the hands forearms and face, especially about the eyes may occur The incidence of dermatitis among workers was very high before adequate precautions were taken

(5) *Barium salts* are used in the manufacture of flares (Véry lights) The hair of operators may be bleached and loss of the hair and the eye brows has been noticed

(6) *Di nitro phenol* has been used in France It is believed to be more poisonous than T N T So far no dermatitis has been reported but covered areas of the skin may excrete the substance and show a patchy yellow discoloration

(7) *Hexa nitro diphenylamine* (aurantia) was combined with T N T in bombs dropped in London and elsewhere during the 1914-18 war Sequeira saw sixty cases in persons who touched the powder from broken unexploded bombs The skin was stained an orange tint The eruption was an acute vesicular dermatitis with closely set lesions involving the palmar surface of the hands and fingers and occasionally the feet The eruption developed as a rule nine days after contact and in some instances led to extensive exfoliation and protracted inflammation due to secondary sepsis

(8) *Mixed acids* In the process of nitrating operators are very liable to lesions from splashing of the mixed acids used We have seen cases in which cheloidal scars were produced

Mustard gas dermatitis A di chlor ethyl sulphide gas having a mustard odour acts as an intense irritant producing an acute dermatitis which begins from four to six hours after exposure Several weeks may elapse before the eruption clears up In gas warfare the vapour affects the flexures moist and greasy parts the liquid gas affects the sites on which it alights The burns have a characteristic appearance with rainbow colours round the margin Tear gas may cause dermatitis

Flax jute and wool may produce irritant dermatitis which is also seen in the silk workers in France and elsewhere

Formalin The skin is remarkably sensitive to this agent Numerous cases of formalin dermatitis occur in pathologists and others handling



FIG 156 Lime dermatitis

specimens preserved in formalin Formalin is used for plastics and glue The dermatitis is erythematous and vesicular and prone to recur

Paper that is sent abroad is passed through a solution of formalin and this type of dermatitis is consequently seen in paper workers

French polishers and others who use bichromate of potassium and similar salts varnish shellac turpentine alkalies and dyes frequently suffer from dermatitis and here the staining of the nails is a guide to the nature of the affection (see Bichromates p 309)

Glass Fine spicules of spun glass penetrate the skin of spun glass workers and cause dermatitis

Glues Synthetic plastic glues provoke dermatitis probably from formaldehyde and from mechanical trauma due to dried particles

Grain itch is considered at p 377

Grooms and coachmen and others having charge of horses and cattle are sometimes infected by *ring-worm* (p 355)

***Hides* and skins** Workers who handle the skins and hides of animals are liable to **anthrax** (p 467)

Lime The wide use of *lime* cement, etc, in engineering and by masons plasterers and others engaged in the building trade causes chronic dermatitis of the hands, often with considerable thickening of the epidermis and painful fissures and ulcers, lime holes, "pigeonneau" (Fig 156)

Luminisers using radio active paints, etc, may develop dermatitis about the ends of the fingers

Mineral oils used in manufacture and classed as "cutting oils cutting



Fig 157 Oil acne

compounds" etc are employed for cooling lubricating and cleansing They affect the skin and hair follicles causing blackheads and red discrete papules and pustules mainly confined to the hands and forearms (Fig 157) (*See Mule spinners cancer*) They also give rise to eczematous dermatitis

Mule spinners' cancer In 1923–24, 252 cases of mule spinners' cancer were investigated by the medical officers of the Home Office The irritant is a mineral oil which is constantly forced through the clothing by contact with the 'mule' used in cotton spinning The long continued irritation caused cancer in the scrotal region in *82 2* per cent of the workers Since similar oils are used in other trades without this high incidence of cancer Robertson has suggested that the trauma occasioned by the mule plays an important *role*

Naphtha workers suffer from a dermatitis similar to that produced by tar (*vide infra*)

Novocain Novocain dermatitis occurs in dentists The eruption consists of itching vesicles on the tips of the fingers produced by massaging the drug into the gums of patients An acquired sensitisation may develop and the slightest contact with the drug will cause a relapse

Oils and greases may provoke dermatitis or oil acne and folliculitis and boils Alkaline oil and water mixtures (Suds) widely used in engineering are a source of much trouble

Painters and workers in encaustic are also liable to dermatitis from irritants used in their employment particularly **turpentine** and similar substances or strong alkali solutions used to clean paintwork

Paraffin is an irritant like tar (*vide infra*)

Pathologists and **post mortem attendants** are liable to infection of the hands by the *tubercle* bacillus (p 475) and warty lesions may result

Petrol dermatitis may result from aviation crashes The lesions exactly resemble a burn of the first and second degrees The area is often large An immediate change of clothing is necessary and a lead lotion with or without calamine 10 per cent is applied Greasy applications increase the discomfort of the patient Cure is usually rapid and complete

Phosphorus may cause an intractable dermatitis in rare cases The sesquisulphide is much more irritant than the ordinary amorphous phosphorus used in making matches (see Match box dermatitis p 322)

Photographers are liable to an eczematous eruption produced by **metol** and those engaged in autotype production suffer from **bichromate** dermatitis

Plastics (see bakelite) are a source of sensitisation dermatitis in susceptible individuals

Printers and **electrotypers** handling lye to wash off the carbon from the formes are subject to an eczematous dermatitis Lithographic printers may suffer from dermatitis due to inks paraffin turpentine oils or acids employed

Rubber workers who use **carbon disulphide** are liable to an irritant dermatitis from this and other causes Leukoderma has also been reported

Salt water boils These are an affliction of deep sea fishermen It only affects those men who actually handle fish on deck Two types of lesions occur one affects the radial aspects of the wrists and the other the upper part of the forearms The former is due to the chafing of the sea water soaked sleeve The skin becomes thickened with raised red areas on which small pustules form affecting the follicles The lesions on the upper part of the forearm are a severe folliculitis with an acute inflammatory reaction round the affected area The coalescence of inflamed areas may cause swelling and inflammation of the whole forearm Scars are left by the boils which are caused by secondary staphylococcal infection

Shellac workers are also affected probably by *turpentine* and *arsenic*

Silicate used for packing round cold storage apparatus and about boilers causes dermatitis probably from the mechanical irritation of the material Frequent inspection of the workmen is necessary

Silver Adamson showed a case of local argyria in a man who worked

with silver nitrate Pigmentation was confined to the parts about the mouth and especially the naso labial furrow Similar conditions occur sometimes in workers with powdered silver and from the application of silver preparations to the eye It would appear that the silver is deposited directly in the skin

Silver- and electro plating cause a papular and papulo vesicular eruption on the backs of the hands *Mercury and also cyanide of potassium* are used in the processes Nickel cadmium, chromium, copper, caustic acids, etc, used in allied plating processes cause similar troubles

Soap, soda and cleansing powders Washerwomen, scrubbers and domestic servants suffer frequently from the constant use of strong soaps

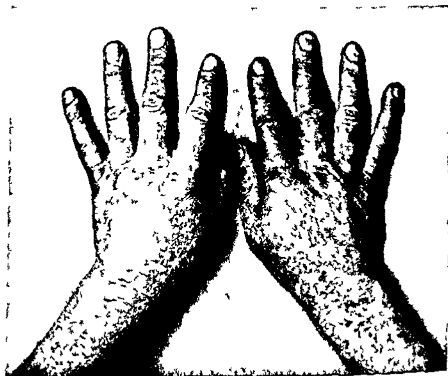


FIG 158 Sugar dermatitis

and soda The repeated maceration of the epidermis in water renders the skin more susceptible (Fig 152) In out patient practice it is common to see eczematous conditions of the face in young children who are washed with soap intended for house cleaning and quite unsuited to the tender skin of an infant

Spectacle dermatitis arises from "plastic and from 'nickel' and "chrome" spectacle frames

Suspender dermatitis results from similar causes and sometimes from rubber

Sugar Grocers confectioners and others who handle sugar suffer from an acute form of dermatitis which often becomes pustular The eruption is usually irritable and was at one time known as 'sugar bakers itch' (Fig 158) It was commonly seen at the London Hospital when there

were several sugar bakeries in the neighbourhood We see a number of cases every year in girls who are engaged in packing sweets

Tar workers suffer from a series of cutaneous affections The majority of cases are seen in those who handle tar pitch creosote anthracene which are all derived from the distillation of coal We have seen cases in men who spray roads with tar Creosoters of railway sleepers telegraph posts and wooden buildings may be affected In the earliest stage there is an eczematous dermatitis Later there are thickening of the skin and the production of warty growths which develop into papillomatous



Fig 159 Tar acne The back and chest were also affected

tumours (tar mollusca) (Fig 160) *many* of which fall off In other subjects there is a tendency for *these tumours* to develop into epitheliomata The presence of a carcinogenic factor in coal tar has been demonstrated experimentally Blast furnace tar is *harmless* A severe form of acne also occurs in tar workers (Fig 159) and degrees of melanosis are common (see Riehl s melanosis p 274)

Vanilla used in confectionery causes erythema papules and vesicles

Wet winders *working in* cotton mills may suffer from acro asphyxia venous stasis with marked terminal anæsthesia of the ends of the fingers leading occasionally to superficial *necrosis* This is due to constant contact with cold water containing potash alum

Woods Certain woods, notably teak (*Tectona grandis*) rosewood (*Dalbergia latifolia*) ebony (*Diospyros ebenum*) East Indian satinwood (*Chloroxylon swietenia*) Oregon pine, produce an irritant dermatitis Satinwood causes papulo vesicular eruption with brawny swelling The face may be involved and the upper air passages are acutely inflamed The irritant in this case is a crystalline alkaloid (Cash) In other woods an essential oil is believed to be the noxious agent Coccus wood used in making flutes also causes an eczematous eruption and musicians occasionally suffer from a dermatitis of the lips from contact with mouth pieces made from grenadilla wood or a synthetic Cane cutters in Provence and other parts are liable to an irritable erysipelatoid eruption with the

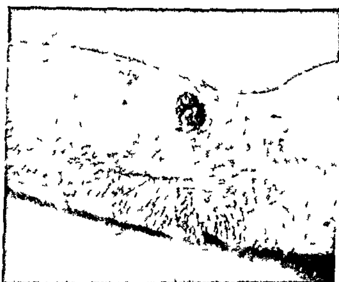


Fig 110 Tar molluscum

development of blebs It is not certain whether this is due to an irritant in the reeds (*Arundo donax*) or to some vegetable or animal parasite

The *precautions* necessary to prevent occupational dermatitis are —

(1) Clean working Among unskilled workers the eruptions and general toxic symptoms are commoner when new factories are opened

(2) Ample facilities for washing are imperative *No food should be taken before the hands and face are washed*

(3) The operators must wear protective overalls and caps Veils are sometimes employed Clothes impregnated with powder may convey irritation to members of a *family not working* Exhaust ventilation will remove noxious dust and is now largely used

(4) *Gloves are often employed* with advantage but they tend to maceration of the skin and are easily contaminated inside Skin varnishes *barrier creams* and powders are sometimes used

(5) All specially susceptible individuals must be excluded

(6) Regular medical inspection should be enforced

In many industries protective applications so called barrier *creams* are used on the hands before starting work Such preparations contain an emulsifying base and often a soap clay mixture and leave an *invisible film*

on the skin which mechanically and partly by adsorption protects the skin from irritant dusts and liquids

Treatment The patient should be removed from work Affected areas of the skin should be cleansed with a weak alkaline solution (℥i sodii bicarb to 2 pints of water) or with sterile olive oil The application of a liniment of calamine (calamine 80 grains olive oil and lime water of each half an ounce) is of great service If alkalies are the cause boric lotion should be used to cleanse the parts and simple oil or liquid paraffin be applied Calamine lotion or liniment containing lime water is apt to aggravate an alkali dermatitis Sedatives may be necessary to relieve irritation and small doses of X rays are often helpful Where oils paraffin or grease cause dermatitis or folliculitis their removal after work with a sulphonated castor oil containing 2 per cent wetting agent may prevent irritation Septic infection is treated on the usual lines by boric acid fomentations and a mild mercurial ointment (hydrarg ammon grains 10 soft paraffin ℥i) Alternation of work should be advised

REFERENCES—R PROSSER WHITE Occupational Diseases of the Skin 4th edn with copious references to original papers N SCHWARTZ and L TULIPAN Occupational Diseases of the Skin

Dermatitis caused by Plants

The commonest form of plant irritation met with in this country is the nettle sting which causes transient wheals More severe inflammations occur from contact with the *Primula obconica* and *P sinensis* which are

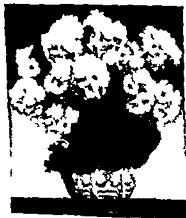


FIG 161 *Primula obconica* (by courtesy of Messrs Sutton and Son)



FIG 16[illegible] May weed (*Anthemis cotula*)

admired greenhouse plants The eruption is vesicular and erythematous and may be attended with general symptoms The poison ivy (*Rhus toxicodendron*) dogwood (*Rhus venenata*) and the poison oak (*Rhus diversiloba*) may also cause an acute erythemato vesicular eruption *R toxicodendron* (also called *Ampelopsis Hoggii*) is sometimes used in this country as a creeper We have seen several instances where the rash has followed trimming the overgrowth In the tropics lacquer (a brown balsam obtained from *Rhus vernicifera*) by simple contact may cause fever œdema and tension of the skin of the face, limbs and genitalia and nasal and conjunctival catarrh Toyama claims to have isolated a non volatile body which is the irritant A severe dermatitis followed the application of an ethereal solution of lacquer found in an antique chest which had been buried 1 000 years "Lily dermatitis" is the name given to an eruption occurring in the gatherers of daffodils in the Scilly Isles "Lily dermatitis" "tulip dermatitis" and "tulip fingers" are common in

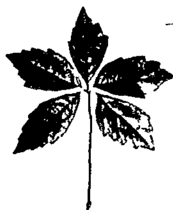


Fig 163 *Ampelopsis Veitchii*
Not irritant



Fig 164 *Rhus toxicodendron*
Poison ivy

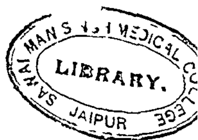
Lincolnshire, Holland and other bulb growing districts Tulip fingers are characterised by painful splitting of the skin of the thumb and finger pulps and round the nail with secondary inflammatory swelling It is probably in part traumatic and infective though an element of idiosyncrasy no doubt exists We have had the opportunity of examining a number of cases of dermatitis in women engaged in cutting daffodils and chrysanthemums for the London market The eruption is of the erythemato vesicular type The most severe bullous eruption may follow contact with "May weed" (Fig 166) and this reaction is well known in some districts Dermatitis from contact with grass has been described under the name of dermatitis bullosa pratensis striata

In tropical countries the juices of a number of the *Anacardiaceæ*, particularly the group of *comocladia* and several of the *Euphorbiaceæ*, cause intense vesicular dermatitis sometimes attended with fever Pardo-Castello states that in the Antilles more than forty species of plants produce skin reactions varying from erythema and pruritus to severe bullous dermatitis

Pyrethrum grown in Kenya on a large scale as an insecticide frequently causes a severe dermatitis incapacitating European planters Idiosyncrasy is a marked factor but an acquired allergy may be highly developed

Plants known to have caused dermatitis are —

Anacardium occidentale and *orientale*
Angelica (cow parsley)
Asparagus officialis
Balm of Gilead (*Balsamum opobalsamum*)
Bell heather
Bitter orange
Burdock (*Arctum lappa*)
Buttercup (*Ranunculus*)
Chrysanthemum
Colchicum
Cotoneaster microphylla
Cowhage (*Mucuna pruriens*)
Cow parsnip (*Heracleum giganteum*)
Cucumber
Daffodil (juice of stem)
Daphne me ereum
Dogwood (*Rhus venenata*)
Eucalyptus hemiphloia
Euphorbiaceæ including spurges and many tropical species *Platygyne pruriens Tragia volubilis Jatropha urens*
Feverfew
Fig (*Ficus*) (the sap)
Foxglove
Geranium
Grass
Hops (*Cannabinaceæ*)
Humea elegans
Indian Bean (*Catalpa bignonoides*)
Indian Turnip (*Psoralia esculenta*)
Ivy (*Hedera helix*)
Lady s Slipper (*Cypridedium calceolus*)
Larkspur (Delphinium)
Laurel
Leopard s Bane (*Doronicum pardalianches*)
Lilac (*Syringa vulgaris*)
May weed (*Anthemis cotiola*)
Metopium toxiforum (Poison wood or poison bark) *B M J* 1946 2 208
Millfoil (*Achillea millifolium*)
Nettle (*Urtica urens*)
Oleander (*Nerium oleander*)
Parsnip (*Plastinaca sativa*)
Poison Ivy[1] (*Rhus toxicodendron* *Ampelopsis Hoggii*)
Primula obconica and *P sinensis*
Pyrethrum



[1] The *Ampelopsis Hoggii* (*Rhus toxicodendron*) has three lobed leaves the commoner *Ampelopsis Veitchii* is five lobed (see Figs 103 104)

Quebracho (*Schinopsis lorentzii*)
Rhus vernicifera
Rue (*Ruta graveolens*)
Skunk cabbage (*Simplocarpus fetidus*)
Smart weed or Water pepper (*Polygonum punctatum*)
Spurge (several species of *Euphorbia*)
Sumac
Squill (*Scilla*)
Thrapsia
Tomato leaves and pollen (*Lycopersicum esculentum*)
Vanilla (*Vanilla plantifolia*)

Individual idiosyncrasy is an important factor in plant dermatitis and in some cases the plants are more irritant at certain seasons

The irritant in some plants is in the juice or sap In others it is in the hairs on the leaves or fruit In Quebracho dermatitis in the Argentine leaves flowers fruit and alcohol and water extracts produce the rash We have seen acute allergic dermatitis of trunk and limbs in a susceptible subject result from entering a tomato house—apparently from inhalation of pollen In many instances it appears to be a glucoside Cranston Low has shown that it is possible by rubbing the juice of a plant such as *Primula obconica* into the broken or unbroken skin to sensitise the skin to that plant This sensitisation is general over the skin but is limited to the integument



Fig 16 Dermatitis from *Primula obconica*

Schamberg and others have shown that a temporary immunity to Rhus poisoning may be obtained by the oral administration of extracts made from the plants

Symptoms of plant dermatitis In a characteristic case the onset is rapid the hands face and genitals are covered with closely set minute

vesicles and bullæ on an erythematous base The eruption itches intensely and there is often considerable tumefaction of the face (Fig 16a) the eyelids may be so swollen that opening them is impossible and in bad cases the lips may be so œdematous that the saliva dribbles through the open mouth Swelling of the ears is a common feature and oozing in the retro auricular sulci may occur Œdema of the hands may impair movement and swelling of the scrotum accompanied by intense pruritus causes great discomfort The eruption may last from a few days to three or four weeks in susceptible subjects

There is evidence that exposure to sun light may make the condition worse The plant irritant causes a photo sensitiveness hence a phyto photo dermatitis such as occurs in some cases of pyrethrum dermatitis which causes considerable disability in European planters in Kenya Sequeira has seen allergic phenomena They occur in other types of plant dermatitis

The eruption is often mistaken for erysipelas but its appearance in gardeners or pickers amateur or professional should lead to careful enquiry as to the possibility of plant poisoning

Treatment A number of remedies have been used for plant dermatitis As a rule treatment should be on the lines of that for acute vesicular eczema The parts should be protected by soothing lotions and creams (p 748) and hyposulphite of soda lotion a drachm to the ounce is recommended Weak alkaline applications are preferred for the more severe reactions a 1 per cent solution of Liq potassæ with alcohol glycerine and water having proved of service A useful cooling lotion is prepared by adding 1 drachm of liquor plumbi subacet fort to 10 ounces of cold boiled milk



FIG 16c Bullous eruption from Mayweed (A phyto photo dermatitis probably)

Dermatitis due to Local Application of Drugs

Certain remedies applied to the skin for therapeutic purposes cause eruptions The commonest met with in practice are shortly described in the following paragraphs

Acriflavine has been known to cause dermatitis and we have seen examples of this

Arnica a household remedy applied in the form of a tincture to bruises

etc may cause a papular erythema which may spread widely from the part treated In many cases the eruption resembles an acute rapidly extending eczema

Atropine and belladonna, when used in ophthalmic practice, occasionally cause an acute erythematous eruption and œdema and a belladonna plaster may also excite a dermatitis

Cade oil is often used for psoriasis and seborrhœic eruptions It may cause erythema but has a special affinity for the hair follicles, producing a



Fig 167 Dermatitis due to hair lotion

suppurative folliculitis We have seen a condition resembling exfoliative dermatitis from its use

Cantharides, often applied for alopecia and for the relief of pain produces an erythema if in dilute solution and vesication if strong Cheloid may follow

Capsicum An acute erythema may be produced by the application of this substance It is frequently used on wool as a counter irritant

Carbolic acid sometimes causes an eczematous dermatitis If strong it acts as an escharotic We have known one application cause cheloid

Chrysarobin or dithranol used for psoriasis and for tinea produces an acute erythema of the skin which may spread far beyond the parts to which it is applied The characteristics of the eruption are a peculiar tint, resembling prune juice and subsequent brownish staining The affected skin is

hot and often very irritable. Where the drug has been used near the face the acute erythema with œdema produces an appearance strongly suggesting erysipelas. In rare cases there may be general malaise and pyrexia. Very rarely a generalised exfoliative dermatitis has been caused by chrysarobin and has lasted for several months.

Cocaine. Pea-sized spots of blue atrophy of the skin in the sites of cocaine injections have been reported by Cottheil and by René Horand. According to these authors the lesions are peculiar to cocaine. Dermatitis also occurs.

Croton oil is sometimes used as a counter-irritant and for the treatment of obstinate cases of scalp ringworm. Its application causes a pustular folliculitis.

D.D.T. may rarely cause dermatitis.

Dyes such as gentian violet and other aniline derivatives irritate some skins.

Formalin, even in weak solution, may provoke an irritant dermatitis (*vide* p. 333) and eruptions of the cheiro-pompholyx type have been met with in laboratory workers.

Iodine, besides staining the skin, sets up an erythema which is followed by desquamation. This property of desquamation is used in the treatment of ringworm of the glabrous skin. We have seen vesicular and bullous eruptions from the absorption of iodine painted on the skin and in one case a cheloid arose on the painted area.

Iodoform occasionally sets up an acute erythema of the scarlatiniform type. Rarely a general exfoliative dermatitis may occur. In some cases there have been grave general symptoms with bullous and hæmorrhagic eruptions.

Mercury applied to the skin in the inunction treatment of syphilis occasionally causes an erythematous eruption. It should never be used in hairy regions as a pustular folliculitis may be set up.

Methyl salicylate, which is commonly used in the local treatment of sprains, etc., may cause a painful papulo-vesicular eruption.

Mustard causes an erythema. Prolonged application of mustard plasters is likely to cause a vesicular eruption.

Novocain produces an eruption of small vesicles on the tips of the fingers of dentists.

Paraphenylenediamine, used for dyeing the hair, may cause a severe dermatitis which may spread on to the face and to flexures.

Penicillin may rarely cause dermatitis.

Peroxide of hydrogen and the **peroxides**, if strong, may cause erythema and vesication. Part of this irritation may be due to acids in the solutions.

Picric acid. A dermatitis of erythemato-vesicular type may follow the application of a 1 per cent. solution. This idiosyncrasy is rare but may be responsible for very severe and widespread erythemato-bullous eruptions.

Pyrogallic acid, used therapeutically and also in hair dyes, may cause acute inflammation with œdema.

Pyrethrum used in powder form or spray as an insecticide may produce a dermatitis of vesicular type which may spread over the body.

etc, may cause a papular erythema which may spread widely from the part treated In many cases the eruption resembles an acute rapidly extending eczema

Atropine and belladonna, when used in ophthalmic practice occasionally cause an acute erythematous eruption and œdema, and a belladonna plaster may also excite a dermatitis

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Fig 10– Dermatitis due to hair lotion

suppurative folliculitis We have seen a condition resembling exfoliative dermatitis from its use

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CHAPTER XVIII

OCCUPATIONAL DERMATOSES AND THEIR MEDICO LEGAL SIGNIFICANCE

Introduction The conditions of employment may play some part in the etiology of many dermatological ills constitutional or otherwise and it is not always possible to draw a hard and fast line between such ills and those in which we believe an occupational factor to be the *essential* cause In this chapter however we attempt to review the recognised occupational dermatoses and their medico legal significance Much confusion exists over the use of the term dermatitis and it is not in our power to resolve that confusion but it will help if we explain how it arises

The term dermatitis may literally be interpreted as relating to any inflammation of the skin as impetigo boil ringworm psoriasis eczema tuberculosis etc etc Quite logically the laity and the legal profession commonly employ this interpretation

Some dermatologists recognising the logic of this usage would merely qualify the term to indicate the apparent cause of the dermatitis *e g* pyogenic tuberculous chemical psychogenic etc

On the other hand many dermatologists use the term dermatitis to indicate an inflammation of the skin provoked by some external irritant usually not infective and associated with diffuse redness swelling and vesication or blistering Such dermatitis may follow contact with some chemical or with a substance to which the patient is specifically sensitive *i e* a contact dermatitis as previously described

This difficulty in nomenclature is not eased by the wording of statutory regulations concerning industrial dermatitis where dermatitis produced by dust or liquids is the only guide to practice

Recognising these difficulties we propose to use the term dermatitis in this section to describe a non infective catarrhal inflammation of the skin with a tendency to vesication and weeping and sometimes to thickening of the epidermis a reaction similar in many particulars to that we have described under eczema

We believe that such a reaction may arise in industry in one of the following ways —

(1) From injury from strong irritants—usually dust or liquids *i e* a *traumatic dermatitis*

( ) From contact with a substance to which the worker is specifically sensitive *i e* a *contact dermatitis*

(3) From long continued exposure—usually to dust or liquids—the wear and tear resulting in eventual breakdown of the normal resistance of the skin and consequent *eczematous dermatitis*

(4) From an admittedly eczema prone subject engaging in an unsuitable occupation and so experiencing a provocation or aggravation of his con*titutional eczema* as the result of contact with dust or liquids at his work

It must be accepted that while these groups may have distinctive

Salicylic acid even in 1 per cent or 2 per cent strength may rarely cause irritation

Scarlet-red Eruptions produced by the local application of this drug have been reported It is used as a blister in veterinary medicine

Sulphonamides applied locally may cause a dermatitis which may be reawakened by giving the drug internally They also induce a photo dermatitis

Sulphur, used so frequently in scabies and other itching eruptions is a common cause of dermatitis The eruption is of the eczematous type and



Fig 168 Turpentine dermatitis from the application of a liniment

is attended with itching which may be attributed to the scabies Non recognition of this fact sometimes leads to persistence in the use of the sulphur and the production of a severe dermatitis usually in the form of a patchy macular erythema dry and slightly scaly with the red follicles prominent

Tar acts as an irritant in many subjects It has a special affinity for the glandular elements of the skin and produces an acne like eruption (*vide* Fig 159)

Turpentine and **terebene** are used as counter irritants In most persons they cause an erythema but if their use is prolonged a vesico-bullous eruption may develop (Fig 168)

removal from the cause but run the chronic and recurrent course of a constitutional eczema

Industrial dermatoses fall into three categories —

(1) Peculiar dermatoses associated with particular hazards

(2) Accidents or injuries

(3) Industrial dermatitis as described above *i e* —

(*a*) Traumatic dermatitis

(*b*) Contact dermatitis

(*c*) Dermatitis from long continued exposure

(*d*) Constitutional eczema provoked by dust or liquids

These disorders are dealt with in the appropriate sections of this book but a little elaboration may be helpful in this section

I Peculiar Industrial Dermatoses

The following are among the most common dermatoses of this group —

Industrial callosities Many trades carry their own callosities peculiar in character and distribution but they are not a source of disability *e g* miners cobblers harpists and fiddlers

Industrial acne Oils tar pitch chlorine especially in organic com pounds as chlor naphthalene carbontetra chloride etc cause blackheads indurated characteristic papules and pustules on those parts of the skin exposed to the irritant The condition should not often become a source of disability

Boils occur in most of these trades and among fishermen and fisher girls from salt water irritation

Beat knee **beat elbow** and **beat hand**' are conditions of infection of bursæ or of subcutaneous tissues of these parts occurring in miners and being dependent in part upon repeated trauma or friction as a result of the nature of the employment

Industrial ulcers Holes are caused by the necrotic action of chrome nickel cadmium lime brine and other chemicals on small cuts and abrasions

Industrial warts and carcinomata arise on the skin of workers in tar pitch mineral oil (mule spinners in the cotton industry) arsenic and from exposure to weather (sailor s skin) and to X rays

Anthrax occurs in agricultural workers and those who handle hides and hair and is a scheduled disease but cattle ringworm erysipeloid vaccinia warts tuberculosis orf (a granulomatous nodule arising about the muzzle of sheep) and other animal infections are not scheduled diseases and do not entitle the sufferer to compensation unless arising as an accident

Tattoo marking staining or pigmentation of the skin occurs in coal gas and tar workers dye workers chemical workers (picric T N T D N C B) polishers etc but is not a source of disability

II Accident or Injury

This will usually result from mechanical injury cuts abrasions lacera tion etc but may be due to other mechanical trauma or injury from heat or cold from electricity or X ray or other radiations or from contact with

features it is nevertheless common for the dermatologist to be presented with eruptions in which he cannot, from clinical appearances alone indicate a particular or single cause There is considerable overlapping and a tendency, even when early manifestations may be distinctive for later changes and end results to be common to all groups An external provocative agent may itself induce a state of hypersensitivity of the skin which then responds by eczematous eruptions independent of an external factor and indistinguishable from constitutional eczema

In the majority of cases a worker suffering from dermatitis arising under paragraph 1 or 2, *i e*, traumatic or contact dermatitis will recover if removed from the cause and he will receive compensation for that attack of dermatitis and will not anticipate a relapse so long as he avoids the particular cause of the trouble

Dermatitis arising under paragraph 3, from long continued exposure is commonly subject to relapse even when the worker is removed from the cause and he is entitled to a declaration of liability " from his employer which entitles him to claim compensation again should relapse occur

Finally, an attack of constitutional eczema paragraph 4 provoked by unsuitable employment, entitles the worker to compensation for that attack but not of course for subsequent attacks unless they similarly result from unsuitable employment

Though the matter will be dealt with later it might be *mentioned here* —while endeavouring to clarify some of the more common difficulties experienced in this field—that dermatitis arising in one or other of the manners indicated above entitles the workman to compensation under the Workmen s Compensation Act since this is a *scheduled disease* He has to obtain a certificate from the Certifying Factory Surgeon (Examining Surgeon) before he can claim compensation

On the other hand should he suffer an accident, *e g* a cut or burn and should that accident give rise to secondary dermatitis (from infection or treatment as may often happen after accidents) then while the workman is *still entitled to compensation for the accident and any of its sequela* (including dermatitis) he should not be certified by the Certifying Factory Surgeon as suffering from dermatitis produced by dust or liquids ' The dermatitis is clearly related to the *accident* and not to the workman s employment in terms of dust and liquids

Industrial dermatoses As a general rule industrial dermatoses arise on the parts in contact with the irritant and clear when the worker is removed from that contact The backs of the fingers and hands the flexors of wrists forearms bends of the elbows the face and sides of the neck are the usual sites The palms and palmar aspects of the fingers are unusually resistant the bases of finger clefts and flexures of the wrists and elbows particularly susceptible Where certain garments get saturated with the irritant *e g*, shoes or socks or trousers then the parts of the body in contact may be first and maximally affected When the irritant is a fine dust or vapour it may chiefly affect the flexures under belts, etc where it adheres to the moist and greasy parts

Some personal predisposition must be present in the worker who develops an industrial dermatitis under conditions which do not affect the majority of workers, and this is why a number of cases do not clear on

carry its own protection in the form of exhaust fans for dusts and gases splash guards for liquids and the machine itself as well as the floor and surroundings should be clean

Workers should be protected by appropriate clothing—caps aprons gloves etc or by protective applications which keep dusts or liquids from the skin— barrier creams or facilitate their removal— emulsifying cleansers or both

Barrier creams applied to the exposed parts of the skin before starting work leave an invisible film on the skin—a barrier or invisible glove — on which the industrial dust or liquid rests to be washed away with the barrier at the end of work Theoretically this is an ideal protection and in practice it is of great value but it is not possible to find the barrier against all substances or suitable for all occasions or works Reference should be made to the memorandum on Industrial Dermatitis and Barrier Creams published by the Ministry of Labour and National Service H M Stationery Office Valuable proprietary barrier creams—they are not easily compounded by the ordinary dispensing chemist—are Rosalex Halden s Protective Creams and Innoxa Barrier Creams

Emulsifying cleansers —similar to soapless shampoos—aim at complete removal of the irritant from the skin and its appendages with the minimum of damage such as would result from the use of common soaps and alkaline cleansers and degreasers They are particularly suitable for removing oils and greases paraffin and other degreasing agents Sulphonated castor oil with 2 per cent of some wetting agent is an example of this type of cleanser and leaves a soft supple skin

Selection and direction of personnel may do much to avoid industrial dermatitis Patients with very dry or moist or greasy skins are not suitable for trades that accentuate those disabilities *Sensitive* and nervous and debilitated patients will have similar skins and will readily fall victim to industrial hazards Seborrhoeic and *hyperidrotic* patients for *constitutional* as well as dermatological reasons are poor industrial risks

Treatment Treatment must not end with removal of the patient from his work and the mere application of bland remedies If the subject can turn to other work and so avoid unemployment it is usually desirable Any general disturbance which may *seem to have predisposed* should receive appropriate symptomatic treatment Any special measures as X ray therapy should be employed with a *view to shortening* an attack for the shorter the period of damage to the skin and to the mind caused by an industrial hazard the better the *prognosis* Care must be taken not to aggravate the dermatitis by *too vigorous* local treatment

Prognosis This is good in the great majority of cases provided the cause is recognised and the patient is not allowed to return to contact with it Early recognition and the avoidance of more than one attack are important

The causes of *industrial cancer* take effect *slowly* but continue to act for years after removal from the hazard Patients working in such trades should be kept under observation *throughout life*

The psychological aspect specially related to the *sense* of security or in ecurity plays an important part in determining the course and prognosis in all industrial dermatoses It is *therefore* helpful for patients to

chemicals producing dermatitis or burns, *e g*, strong acids, alkalies, fulminate of mercury, dinitrochlorbenzine, etc *All or the majority of workers if exposed to these hazards will suffer injury*

III Industrial Dermatitis

To come within the meaning of the Workmen s Compensation Act an industrial dermatitis or eczema must be caused by dust or liquids This will generally arise from —

(1) Wear and tear as the result of long continued exposure

(2) The development of a specific sensitisation after longer or shorter exposure to some substance with which the worker comes into contact

(3) The patient being an eczema prone subject and unsuitable for the particular occupation

Few or a minority of the workers in an industry will suffer damage from hazards considered in this section

(1) Dusts or liquids may act by destroying the natural fatty and keratinous protection of the epidermis—as in washerwomen cleaners, millers and scourers in textile industries wet grinders workers in oil bricklayers, workers with paraffin and degreasing agents etc Water and oil maceration and alkalies are the common causes

The removal of industrial substances from the skin *e g*, dough in bakers, dirt and grease in engineers etc , may damage the skin by trauma and determine the onset of a ' wear and tear dermatitis

Dust or liquids themselves may act as mechanical irritants as in quarrymen, grinders etc

(2) A specific sensitisation may develop from longer or shorter contact with almost any substance Such dermatitis like most allergic reactions is often acute and associated with considerable œdema simulating an acute traumatic dermatitis

The specific sensitiveness may be demonstrated by the *patch test* which is described in the section dealing with eczema and dermatitis A little of the suspected substance is applied to the skin for a period of twenty four hours and if the worker is sensitive to it a positive reaction results

Detection of the particular cause in this way may enable a worker to keep at work by avoiding that substance Such specific sensitisation once acquired is not likely to be lost Weak solutions of chrome oils dyes, turpentine white spirit varnishes antiseptics polishes nickel and other metals and cosmetics are some of the substances to which sensitisation may arise causing dermatitis

(3) Dusts and liquids may act as mechanical or chemical irritants provoking eczema in those predisposed to such troubles The predisposition may be inborn or it may arise as part of such changes as accompany puberty, pregnancy menopause or may be the result of ill health physical or mental

Prophylaxis The prevention of industrial dermatitis is in large part determined by common sense

The first essential is a clean industry An efficient machine should

resulted in unsuccessful claims to compensation for personal injury by accident

On the other hand the workman should succeed in his claim for compensation if he can show that the disease resulted from accidental circumstances the occurrence of which he can fix approximately in point of time Thus claims have been established in circumstances such as the following where a man had to wash up crockery in hot water and soda and his hands being in a super sensitive condition became inflamed and the nails dropped off where cattle ringworm was contracted from infected calves and the workman was able to fix a date with reasonable certainty where a girl after sustaining numerous cuts and scratches on her hands over a long period ultimately became totally incapacitated from blood poisoning and it was held that she was none the less entitled to compensation because her disease was due not to one specific and definite accident but to a series of accidents each one of which was specific and ascertainable though its actual influence on the resulting illness could not be precisely fixed

The Act does not apply to idiopathic diseases as the origin cannot be traced to a particular infection

Idiosyncrasy pre disposition pre existing weakness or other inherent defect in the workman himself are *not* factors which can militate against his claim to compensation for personal injury by accident

Whilst other phrases in the section under review such as arising out of and in the course of the employment have given rise to much legal difficulty in definition it is not considered that they call for special comment here in relation to cases of dermatitis

B As an Industrial Disease under the Workmen's Compensation Act 1925 Section 43

The Act provides that certain scheduled diseases due to the nature of the employment are within the Act and are for the purposes of compensation to be deemed personal injury by accident

It will thus be seen that apart altogether from the happening of anything in the nature of an accident as considered above the contracting of a scheduled disease under the conditions laid down in the Section gives rise to a claim for compensation

The diseases are those specified in the Third Schedule of the Act and in orders issued by the Secretary of State

The following is an extract from the Schedules and Orders defining the dermatoses of occupational or industrial origin —

Description of Disease or Injury	*Description of Process*
(1) Anthrax	Handling of wool hair bristles hides and skins
(2) Poisoning by Gonioma Kamassi (African boxwood) or its sequelæ	Any process in the manufacture of articles from Gonioma Kamassi (African boxwood)
(3) Dermatitis produced by dust or liquid	
(4) Ulceration of the skin produced by dust or liquids	
(5) Ulceration of the mucous membrane of the nose or mouth produced by dust	
(6) Epitheliomatous cancer or ulceration of the skin due to tar pitch bitumen mineral oil or paraffin or any compound product or residue of any of these substances	Handling or use of tar pitch bitumen mineral oil or paraffin or any compound product or residue of any of these substances

be early and accurately advised on the nature of their industrial ills—on the course such ills should take—their significance in relation to future employment and their medico legal aspects These are usually matters for the expert

Medico-Legal Aspects of Industrial Dermatitis

The claim of a workman or his dependants against the employer in relation to a dermatitis contracted by the workman falls to be considered under two headings

A As a personal injury by accident, *i e*, under the Workmen's Compensation Act 1925 Section 1

B As an Industrial Disease, *i e* under the Workmen s Compensation Act 1925, Section 43, as being one of the diseases mentioned in the Third Schedule to the Act

Claims may also arise at common law when the injury was caused by the personal negligence or wilful act of the employer or of some person for whose act or default the employer is responsible In such a case the workman or his dependants may elect whether to claim compensation under the Workmen s Compensation Act or to take proceedings independently Such common law claims however do not possess any special medico legal significance and it is not proposed to deal with them in these notes

A Under Workmen's Compensation Act, 1925—As a Personal Injury by Accident

If in any employment personal injury by accident arising out of and in the course of the employment is caused to a workman his employer shall subject as mentioned in the Act be liable to pay compensation

Meaning of "Accident"

The word accident is used in the Act in its popular and ordinary sense as an unlooked for mishap or an untoward event not expected or designed It should be regarded from the point of view of the workman who suffers from it and whatever its cause it will be accidental so long as it was not designed by the workman himself

Examples of Dermatoses as Accidents

From accidents as so defined arise a wide range of skin affections Amongst these may be noted cuts abrasions and lacerations the effects of excesses of heat or cold shocks and burns from electricity burns and other trauma from X ray and other radiations and burns and dermatoses from contact with chemicals such as fulminate of mercury and dinitro chlorbenzine

A disease which is gradually produced as a natural result of prolonged employment of a particular kind cannot be regarded as an accident and is not within the Act unless it falls within the provisions of Section 43 as an 'Industrial Disease Thus eczema caused gradually by exposure to fumes or splashes of chemicals and a dermatitis from the continued use by a hairdresser of certain shampooing ingredients have both

The word "sequelæ" used in the Schedule signifies "symptoms or morbid conditions which either remain or supervene after a disease has run its usual course" (Quain's "Dictionary of Medicine").

With reference to "a localised new growth of the skin papillomatous or keratotic due to mineral oil" there is a special provision in the relevant order making it a condition precedent to compensation that at least one week before the date of the commencement of the disablement written notice shall have been given by the workman to the employer that application is to be made to the Examining Surgeon for a certificate of disablement and notice personally or in writing is given to the Examining Surgeon that the workman is applying for such a certificate. Furthermore compensation is not payable for more than fourteen days in all unless the judge is satisfied that the workman is still disabled at the expiry of the fourteen days.

With reference to the dermatoses 3, 4 and 5 p. 353 no compensation is payable if the workman is disabled only for employment in the particular process in which the disease has been contracted or other process involving *risk of the disease* unless the judge, committee or arbitrator is satisfied that the disease has been contracted through long continued exposure to dust or liquids in the industry in which the workman was engaged at the time of disablement. The question of whether the disease has been contracted through long continued exposure is one of fact.

Susceptibility to Recurrence

The tendency of dermatitis to recur has been discussed in the earlier part of this chapter.

The Act provides that the disablement or suspension is to be treated as the happening of the accident. It is the disease itself and not the disablement that is to be treated as the notional injury by accident so that the workman does not cease to be entitled to regard himself as having sustained injury by accident merely because his disablement ceases temporarily. He continues to be entitled to treat himself as suffering from an injury arising out of an accident so long as he suffers from the disease and will be entitled to compensation if the disease breaks out again unless there has been a finding or a certificate of complete recovery.

Difficult questions however may arise as to the cause of the recurrence and the implications of that cause. If the recurrence is a recrudescence or continuance of the first attack the effects of which have not completely passed away then the workman's claim succeeds. If however the recurrence is due to the workman's own constitutional predisposition to the disease and his greater susceptibility to it then the claim founded as it is on the certificate of the Examining Surgeon fails.

Observations on the Examining Surgeon's Certificate

The obtaining of a certificate is a condition precedent to a right to compensation for disablement. It is the certificate which creates or calls into being the notional accident upon which the claim is based.

The certificate must be a valid one and no order can be made upon one which is invalid.

It must be granted by the Examining Surgeon for the district in which

Description of Disease or Injury	*Description of Process*
(7) Ulceration of the corneal surface of the eye due to tar pitch bitumen mineral oil or paraffin or any compound product or residue of any of these substances	Handling or use of tar pitch bitumen mineral oil or paraffin or any compound product or residue of any of these substances
(8) Chrome ulceration or its sequelæ	Any process involving the use of chromic acid or bichromate of ammonium potassium or sodium or their preparations
(9) Scrotal epithelioma (chimney sweeps cancer)	Chimney sweeping
(10) A localised new growth of the skin papillomatous or keratotic due to mineral oil	Cotton spinning by means of self acting mules
(11) Subcutaneous cellulitis of the hand (beat hand)	Mining
(12) Subcutaneous cellulitis or acute bursitis arising at or about the knee (beat knee)	Mining
(13) Subcutaneous cellulitis or acute bursitis over the elbow (beat elbow)	Mining
(14) Glanders	Care of any equine animal suffering from glanders handling the carcase of such animal
(15) Inflammation ulceration or malignant disease of the skin or subcutaneous tissues or of the bones or their sequelæ or anæmia of aplastic type due to X rays radium or other radio active substance	
(16) Inflammation of the skin caused by radiant energy other than X rays radium or other radio active substance	

Compensation is payable in respect of the foregoing in three cases —

(1) Where the Examining Surgeon for the district in which the workman is employed certifies that the workman is suffering from such a disease and is unable to earn full wages at his work

(2) Where under rules or regulations of the Factories Act 1937 a workman is suspended on account of having contracted such a disease

(3) Where the death of a workman is caused by such a disease

In all these cases compensation is only payable if the disease is due to the nature of any employment in which the workman was employed during the twelve months previous to the date of disablement or suspension whether under one or more employers

Observations on the Scheduled Diseases

It will be observed that the second column of the Schedule sets forth a description of the process The Act however applies to any scheduled disease irrespective of the process out of which it is alleged to arise The process only becomes material for the purpose of Section 44 (1) Section 44 (1) provides that if a workman at or immediately before the date of disablement or suspension is employed in the process mentioned in the second column and contracts the disease set opposite to it in the first column the disease unless the Examining Surgeon certifies that in his opinion it is not due to that employment is deemed to have been due to the nature of the employment unless the employer proves to *the contrary* It will thus be seen that the concurrence of the disease and the process in the absence of a contrary certificate results in a presumption in favour of the workman If however the workman was not employed in the scheduled process the onus is on him to prove that the scheduled disease is due to the nature of his actual employment There will be a similar onus upon him also in relation to those diseases opposite to which there is no process mentioned in the second column of the Schedule

The word "sequelæ" used in the Schedule signifies "symptoms or morbid conditions which either remain or supervene after a disease has run its usual course" (Quain's Dictionary of Medicine)

With reference to "a localised new growth of the skin papillomatous or keratotic due to mineral oil" there is a special provision in the relevant order making it a condition precedent to compensation that at least one week before the date of the commencement of the disablement written notice shall have been given by the workman to the employer that application is to be made to the Examining Surgeon for a certificate of disablement and notice personally or in writing is given to the Examining Surgeon that the workman is applying for such a certificate Furthermore compensation is not payable for more than fourteen days in all unless the judge is satisfied that the workman is still disabled at the expiry of the fourteen days

With reference to the dermatoses 3 4 and 5 p 353 no compensation is payable if the workman is disabled only for employment in the particular process in which the disease has been contracted or other process involving risk of the disease unless the judge committee or arbitrator is satisfied that the disease has been contracted through long continued exposure to dust or liquids in the industry in which the workman was engaged at the time of disablement The question of whether the disease has been contracted through long continued exposure is one of fact

Susceptibility to Recurrence

The tendency of dermatitis to recur has been discussed in the earlier part of this chapter

The Act provides that the disablement or suspension is to be treated as the happening of the accident It is the disease itself and not the disablement that is to be treated as the notional injury by accident so that the workman does not cease to be entitled to regard himself as having sustained injury by accident merely because his disablement ceases temporarily He continues to be entitled to treat himself as suffering from an injury arising out of an accident so long as he suffers from the disease and will be entitled to compensation if the disease breaks out again unless there has been a finding or a certificate of complete recovery

Difficult questions however may arise as to the cause of the recurrence and the implications of that cause If the recurrence is a recrudescence or continuance of the first attack the effects of which have not completely passed away then the workman's claim succeeds If however the recurrence is due to the workman's own constitutional predisposition to the disease and his greater susceptibility to it then the claim founded as it is on the certificate of the Examining Surgeon fails

Observations on the Examining Surgeon's Certificate

The obtaining of a certificate is a condition precedent to a right to compensation for disablement It is the certificate which creates or calls into being the notional accident upon which the claim is based

The certificate must be a valid one and no order can be made upon one which is invalid

It must be granted by the Examining Surgeon for the district in which

the workman is employed It is invalid if given by the Examining Surgeon for the district in which the man *resides but is not employed*

The certificate must be in the prescribed form and the disease named must coincide with the statutory description

The Examining Surgeon must make a medical examination of the workman He is not however limited to such examination but may make any necessary and suitable enquiries

The Examining Surgeon must state in the certificate the process in *which the workman alleges he was employed* but the process need not be the one set opposite to the disease in the Schedule

Appeal against the Certificate

In the absence of an appeal the certificate is conclusive as to the nature of the disease and the date of disablement

An appeal lies at the instance of either employer or workman In the case of the employer s appeal it must be within ten days of the receipt of the notice of disablement or suspension In the case of the workman it must be within ten days of the receipt of the certificate In either case however the Registrar has power to extend the time by seven days

The appeal is to the Medical Referee appointed for the district who may be a Medical Referee appointed for a special class of case *e g* for *industrial dermatitis*

The decision of the Medical Referee is final and there is no appeal *from it*

Considerable changes in procedure in relation to workmen s compensation will take place when the National Insurance (Industrial Injuries) Bill becomes law The scheme will run on a contributory basis and benefits *will take the* form of an injury allowance for the first twenty six weeks after which should incapacity persist there will be a disablement pension based on the character of the physical injury and not on loss of earning power There will also be allowance for dependants

It will be the duty of the employee to notify a Government Insurance Officer giving particulars of the injury of the family dependants and supplying a certificate of incapacity from a doctor The employer should also notify the Government Insurance Officer

After investigation the Insurance Officer may authorise payment through the Post Office or he may refer the patient for medical examination or to a medical board Appeals may come before a local Appeals Tribunal or Medical Appeals Tribunal and the patient may be directed for medical treatment or rehabilitation or *vocational training*

Psychological complications consequent upon Medico Legal procedures

At present the benefits paid under the *Health Insurance Act for sickness* are often no more than half those paid for industrial injuries and the latter carry with them the possibility of a lump sum settlement or a pension This becomes a serious matter when it is recalled how difficult it may be to assume a dogmatic attitude in relation to an industrial etiology

It is *our experience that many workers receive no monetary* benefits for weeks and sometimes months after ceasing work where the cause of disability is questioned as being industrial in origin This is not necessarily the fault of the Act but for various reasons *there may be delay in bringing the workman* before an Examining Surgeon or before a Medical Referee for a decision upon appeal The delay is often a cause of distress and financial embarrassment to a workman

It will readily be appreciated that these circumstances *favour the super*imposition of psychological complications upon any disability The course of any dermatological illness in a workman is commonly aggravated and the prognosis and tendency to relapse worsened by these influences

GROUP 5

INFECTIVE DERMATOSES

CHAPTER XIX

AFFECTIONS CAUSED BY ANIMAL PARASITES

Scabies—Pediculosis—Tropical Diseases

ANIMAL parasites attack the skin (*a*) in search of food *i e* to suck the blood (*b*) to deposit their ova (*c*) on their way to the surface from deeper organs and (*d*) accidentally

Parasites which attack the skin in search of food —

(1) Pediculi or phthirius lice (2) Ixodes ticks (3) Leptus autumnalis harvest bug (4) Pulex irritans flea (4) Cimex lectularius bed bug (6) Culex gnat or mosquito (7) Pediculoides in grain itch (8) Tyroglyphus longior in copra and cheese itch and various tropical parasites

Parasites attacking the skin to deposit ova —

(*a*) Ova are deposited in the skin by (1) the Sarcoptes scabiei the itch mite (2) Animal sarcoptes (3) the Œstrus gadfly (4) Pulex penetrans jigger or sandfly

(*b*) Ova are deposited on the hair by (1) Pediculus capitis the head louse (2) Phthirius pubis the crab louse and (3) Pediculus corporis body louse The last more commonly lays its eggs on the body linen

Parasites attacking the skin on the way to the surface from the deeper organs —

(1) Cysticercus hydatid and (2) Dracunculus the Guinea worm

The skin is attacked accidentally by contact with certain larvæ the hymenoptera bees wasps hornets etc

Scabies The Itch

(Lat *scabere* to scratch)

Scabies is a parasitic contagious disease caused by the Sarcoptes scabiei The characteristic lesions are the burrows produced by the female There is intense itching with a polymorphous eruption aggravated by scratching and often infected

The **Sarcoptes scabiei** (Fig 160) (Gk *sarx* flesh *kopto* I cut) belongs to the Arachnidæ and the sub-order Acari and not to the Insecta The parasite is frequently called the Acarus (Gk *akari* mite) The female of pearly grey colour 400 μ by 300 μ is just visible to the naked eye The male is somewhat smaller 200 μ by 150 μ The sarcoptes have eight short legs the four anterior provided with suckers the four posterior with bristles in the female the fourth pair of legs bearing suckers in the male During life the suckers are flaccid sacs the mechanism of which is obscure The larvæ have only six legs The eggs are oval and of com

paratively large size 150 μ by 100 μ The impregnated female burrows her way into the horny layer of the epidermis, where she lives for about two months and there lays her eggs two or three a day The little tunnel thus produced causes a linear elevation of the skin from one eighth to half an inch or more in length This is the "cuniculus" or "burrow The ridge is greyish or even black in colour and in close proximity to it there is a small vesicle On dissecting out a burrow and examining it under a low power, the female sarcoptes is found at the distal extremity and behind her at intervals lie the ova from a dozen to fifty in number the ovum nearest the orifice of the burrow being the first laid There are also tiny black spots of the excrement of the acarus The ova hatch in from three to four days and the young embryos make their way through the roof of the burrow on to the surface where they find food and shelter in the hair

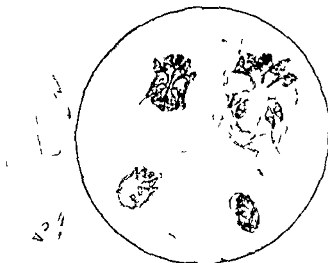


Fig 169 Sarcoptes Male female embryo ovum × [illegible]

follicles They reach the adult stage in four to six days The females having developed and being impregnated make their way into the skin and *form fresh burrows Scratching may naturally convey the parasites from* one part of the body to another The male acarus is rarely found as it lives for a short time in a minute burrow but mostly on the skin surface in search of a female

Intimate contact is apparently necessary for contracting the disease Sleeping with scabietic persons is the usual cause but sleeping in infected beds or wearing *infected clothing is a possible source of infection* Scabies is one of the commonest diseases in hospital practice but no class is exempt In the cleanly it is frequently not thought of and may persist *because appropriate treatment is not applied* In war scabies is so common as to interfere gravely with military efficiency and its incidence amongst civilians constitutes a serious problem in war medicine

The investigations of Kenneth Mellanby have advanced our knowledge of the life history and the treatment of scabies It is now clear that itching is not experienced until the victim has become sensitised to some product (? saliva) of the mite (scabin) This will be experienced from four to six *weeks* after the disease has been contracted The immature *mites*

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